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Summary

ENVIRONMENTAL MANAGEMENT PLAN

San Francisco Bay Region

WORK PROGRAM

Summary

*Environ. pol. - CA - SF bay area
Reg. plan*

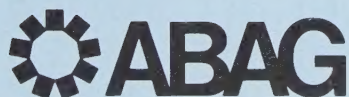
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Association of Bay Area Governments

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HIGHLIGHTS

Study Title: Environmental Management Plan,
San Francisco Bay Region

Responsible Agency (Contractor): Association of Bay Area Governments
Hotel Claremont, Berkeley, CA 94705

Source of Funds: U. S. Environmental Protection Agency
Federal Water Pollution
Control Act Amendments of 1972
Section 208

Grant Amount: \$4.3 million

Study Area: Nine-county Bay Area, generally
excluding portions of northern
counties which do not drain into San
Francisco Bay

Time Period: June 1975 - June 1976
Preparation of Work Program

June 1976 - June 1978
Development of Environmental
Management Plan

The preparation of this report was financed in part through a grant from the Environmental Protection Agency under Section 208 of the Federal Water Pollution Control Act Amendments of 1972. The opinions, findings and conclusions expressed are those of the Association of Bay Area Governments and not necessarily those of the Environmental Protection Agency.

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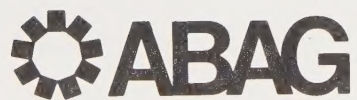
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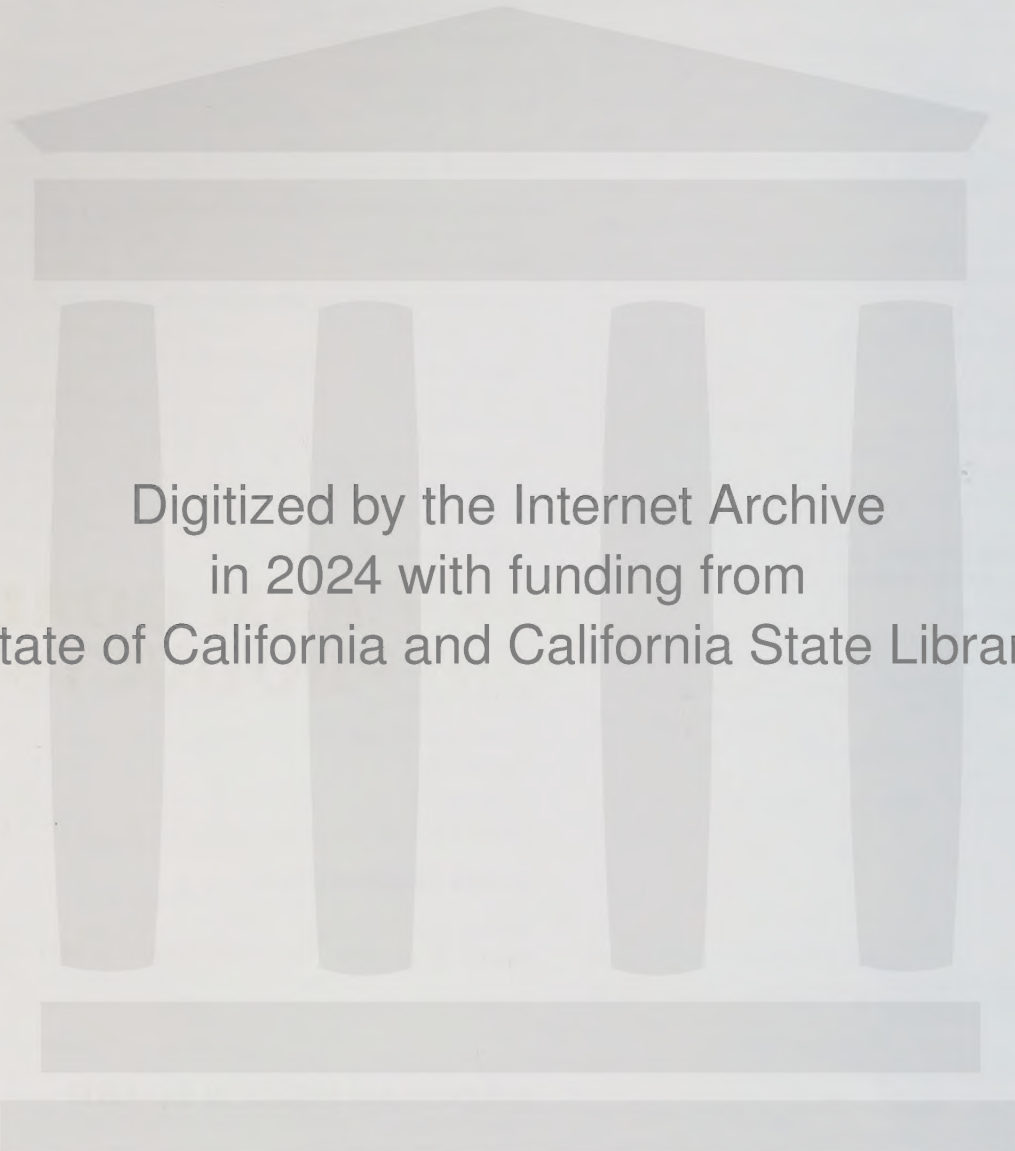
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I. PROGRAM GOAL AND PRODUCTS

Introduction and program goal 1

Major products of the
Environmental Management Plan 3

Introduction and program goal

This summary of the work program for preparing the Environmental Management Plan for the Bay Area is composed of the following sections:

- **Program goal and products:** explains why the plan is being prepared; sets forth the goal and describes products of the program.
- **Basis for the plan:** gives a brief history of planning for air, water and solid waste management in the region; describes the air quality, water quality, and solid waste problems to be addressed; describes the goals in the Federal Water Pollution Control Act Amendments of 1972, the Federal Clean Air Act, and state policy for air and water pollution control and the disposal of solid waste; describes the mandate to prepare an Environmental Management Plan for the Bay Area.
- **Process for preparing the plan:** sets forth the general assumptions for the work program and describes the two-year planning process.
- **Organization for preparing the plan:** describes the roles of public agencies in preparing and approving the plan and the role of the Environmental Management Task Force.
- **Budget:** summarizes the distribution of funds.

The funds for this program (\$4.3 million) come from the U.S. Environmental Protection Agency. These funds were authorized under the Water Pollution Control Act Amendments of 1972. Section 208 of those amendments provided for the preparation of areawide water quality management plans in urban/industrial areas. EPA has decided that in this region the plan should also address problems of air quality and solid waste to the extent allowed under the Act. An Air Quality Maintenance Plan will be prepared using part of the funds. This plan will comply with the Federal Clean Air Act of 1970.

Because the plan covers water quality, air quality, and solid waste, it will be the Environmental Management Plan for the region. It will be prepared by ABAG in cooperation with local, regional, state, and federal agencies. It will be the environmental management element of ABAG's Regional Plan, which includes other elements such as housing and transportation.

The study area for the plan is shown on the maps in the pouch inside the back cover. The air quality, water quality, and solid waste problems to be addressed are also shown on these maps and lead to the following conclusions:

- The air quality problem is regional in scope, and its solution is likely to demand both regional and local perspectives.

- Some of the water quality issues, such as the effect of Sacramento-San Joaquin Delta outflow on the Bay, are obviously regional.
- Other water quality problems, such as the effects of surface runoff in receiving waters, tend to be local or subregional in nature.
- Solid waste problems may be dealt with at the county level for a few more years, but longer-term planning demands a regional perspective.

The goal of the program is to produce an Environmental Management Plan that has the following characteristics:

- **It will lead to the greatest possible improvement in water and air quality and problems caused by solid waste, and will lead to compliance with federal and state standards and objectives at the earliest possible date.**
- **It will not have social, economic, or environmental effects so unacceptable as to prevent implementation.**

Major products of the Environmental Management Plan

Introduction

The purpose of this section is to describe the products of the Environmental Management Plan.

The products can be grouped as follows:

- management plans.*
- assessment of the environmental, social and economic impacts of the management plans.
- a continuing planning program.

The first group of products consists of seven major management plans. Each management plan includes control measures and, for most of the plans, the institutional/financial, legislative, and other actions necessary to implement the control measures. The management plans for solid waste and water conservation, reuse, and supply will not contain components for institutional/financial mechanisms (except for hazardous wastes and reuse measures); those components of the plans will be developed in the continuing planning process. The management plans are:

- surface runoff
- air quality maintenance
- municipal wastewater facilities
- other nonpoint sources
- industrial discharges
- water conservation, reuse and supply
- solid waste (including municipal wastes, hazardous wastes, and wastewater residuals)

The second product is an assessment of the

environmental, social and economic impacts of the selected management plans; it is required by law. This final assessment and similar assessments conducted earlier in the two-year planning process will be the basis for the selection of control measures for the management plans.

The functions of the third product, the continuing planning program, will be to:

- identify environmental issues and methods for dealing with them
- provide the general public and agencies with information on the environmental management plan and elicit responses to that information
- provide environmental information, including forecasting, on a routine basis
- update the Environmental Management Plan
- inventory agency plans and actions
- use and refine working relationships among agencies developed during preparation of this plan
- monitor plan implementation

Management plans: sub-elements of the regional Environmental Management Plan

For each management plan, a list of the reasons for its preparation is presented. It is not possible at the beginning of this planning effort to anticipate all specific products. However, each plan will consist of control measures and most plans will include the institutional/financial, legislative, and other actions necessary to implement the control measures. Control measures to be considered will range from large structures to changes in land use practices; they could include street cleaning, industrial

*Because these plans comprise the Environmental Management Plan (EMP), and because the EMP is an element of the Regional Comprehensive Plan, the management plans will be sub-elements of the Regional Comprehensive Plan.

wastewater pretreatment, or regulation of automobile use.

Surface runoff

Reasons for preparing the plan:

- Control measures for urban runoff are required by Section 208 (b) (2) of the Water Pollution Control Act Amendments of 1972.
- Most nonpoint pollution results from surface runoff.
- Pollutant load percentages will increase in the future because of additional urban development and as point source pollution is abated.
- Surface runoff is a major cause of shellfish contamination.
- Runoff causes high bacterial contamination and restricts use of Lake Merced and Lake Merritt.
- Runoff is a major source of heavy metal loadings to Bay waters in wet weather.
- Surface runoff is probably the major source of litter in the Bay and on its shores and mudflats.
- Runoff from dairy farms enters tributaries in Marin and Sonoma counties and restricts and endangers beneficial uses of water bodies (i.e., water supply, fish spawning areas, and shellfish beds).
- Almaden, Calero, and Guadalupe reservoirs are closed to fishing because of mercury contamination from upstream abandoned mines.
- Runoff from logging operations and other activities affects existing and potential beneficial uses of San Mateo coastal streams.
- Runoff from construction activities sometimes affects beneficial uses of water bodies.
- Runoff from the copper slag heaps near Benicia enters Bay waters.

- Control measures for agriculture, silviculture, and mine and construction-related activities are required under Section 208 of the Water Pollution Control Act Amendments of 1972.
- “Minimum standards for erosion control, especially related to construction activities” were recommended in the Basin Plan for the Bay Area.

In preparing this plan, runoff problems in both urban and rural areas will be examined. However, greater emphasis will be given to urban runoff because it is a more important source of pollution. Near-term control measures for surface runoff will be evaluated. Such measures as street sweeping, refuse clean-up, and catch-basin cleaning will be considered.

An alternative approach, such as structural control measures to collect and treat urban runoff, could require capital investments for the region as high as 12 billion dollars. The cost effectiveness of such an approach has yet to be demonstrated. Thus, these measures will be investigated only on a reconnaissance level in order to provide a basis for further planning after the impacts of urban runoff are better understood. In addition, possible changes in the way land is used will be considered. For example, construction on the steeper slopes could be limited, or, to reduce peak runoff, new home developments might be required to provide storage for storm runoff. A more severe measure would be to prohibit development on some land so that the runoff problem would not be aggravated.

Air quality maintenance

Reasons for preparing the plan:

- Although significant progress has been made toward controlling sources of air pollutant emissions, federal and state air quality standards are frequently violated.
- Violations of these standards are projected to continue into the foreseeable future, given trends in automobile use, land development, and population growth in the region.

- The Bay Area is an air quality maintenance area for photochemical oxidants, sulfur dioxide, and particulates. Air quality problems in the southern part of the region and in the Livermore Valley are caused in part by emissions generated in other parts of the Bay Area.
- Technological controls for automobiles and industry will not be adequate to maintain acceptable levels of air quality; therefore, land use and transportation controls must be considered for both local and regional implementation.

In preparing the plan, the following courses of action would be considered:

- new car controls: The Federal Motor Vehicle Control Program established limits and time schedules for emissions from new vehicles. To date, EPA has concentrated on light-duty automobiles; however, it has the authority to regulate heavy-duty gasoline trucks, heavy-duty diesel trucks, and motorcycles.
- aircraft controls: EPA has the authority to regulate aircraft emissions. The regulations have focused mainly on particulate emissions and, to a lesser extent, on gaseous pollutants.
- in-use vehicle controls: These controls are directed at reducing emissions from vehicles in use through application of retrofit devices and periodic vehicle inspection. States are responsible for implementing, monitoring, and enforcing these programs.
- existing stationary source controls: These control programs are the primary responsibility of local agencies (e.g., the Bay Area Air Pollution Control District). Overall guidance is provided by the state, with principal enforcement carried out by local agencies as delineated in the locally adopted "Rules and Regulations".
- transportation controls: A number of programs are involved but there has been no clear identification of responsible implementing or enforcement authority. Measures proposed would reduce private

vehicle use and reduce pollution from existing travel.

- land use controls: A number of programs could be involved, but there has been no clear identification of responsible implementing or enforcement authority. Specific programs related to transportation controls are in EPA plans for indirect source review and parking management (both of which have been suspended indefinitely).

Because of the number of agencies authorized to implement air pollution controls, staff assigned to the preparation of the air quality maintenance plan will work closely with federal, state, regional and local agencies. In certain cases, formal arrangement will be made for joint staff participation on selected work program activities.

Municipal wastewater facilities*

Reasons for preparing the plan:

- Section 208 of the Water Pollution Control Act Amendments of 1972 requires the preparation of a plan and the designation of an agency to carry it out and states that neither discharge permits nor grants will be given agencies for facilities not in conformance with the plan.
- Municipal point sources controls have not been implemented for much of the Bay Area, although much progress has been made.
- Questions concerning the relationship of 201 facilities to secondary environmental effects (air quality and land use) have been raised and must be addressed in the preparation of this Environmental Management Plan.

A description of municipal waste treatment system needs over at least a 20-year period will be included in this plan. Waste load reductions needed to attain and maintain standards and

*Planning and construction of these facilities are mandated under Section 201 of the Water Pollution Control Act Amendments of 1972.

results of preliminary and completed planning pursuant to Section 201 of the Water Pollution Control Act Amendments of 1972 will also be included.

This plan will be based on existing 201 plans and should not delay ongoing 201 projects.

Other nonpoint sources

Reasons for preparing the plan:

- Despite many years of concern and effort, houseboat problems in the region are still unsolved; raw sewage is discharged from houseboats into Richardson Bay and other areas.
- In general, there are no facilities for disposing of waste from pleasure craft and commercial vessels in compliance with existing regulations. This leads to localized impacts.
- Sanitary facilities in recreational areas are inadequate to accommodate increased use.
- Failing septic tank systems have caused water quality and public health problems. For example, septic tank effluents threaten water supplies in the Bear Gulch and Lake Hennessey watershed.
- Continued use or replacement of septic tank systems will affect growth patterns in suburban and rural areas (e.g., Santa Clara and Alameda Counties).

Early in the planning process, each nonpoint source will be examined. For those sources deemed important, a management **plan** as well as a process will be developed. (It should be noted that some nonpoint sources such as agricultural runoff and construction erosion will also be examined under the surface runoff management plan even though the primary emphasis of that plan is on urban runoff.)

Recommendations of this plan could include:

- vessel holding tanks and on-shore facilities to empty and dispose of wastes

- regional policies on septic tank construction and maintenance
- regulations requiring municipal sewerage facilities to be capable of treating trucked-in waste from recreational areas
- regional policies on control of construction erosion

Industrial discharges

Reasons for preparing the plan:

- A facilities program is required by Section 208 of the Water Pollution Control Act Amendments of 1972.
- Industrial discharges may be situated in critical water quality locations.
- Major industries are situated along major fish migration and spawning routes, where annual fish kills occur.
- Disposal of brine from the Leslie Salt Company is likely to cause water quality problems.
- Industrial wastewater pretreatment requirements could affect industrial operations and will result in more hazardous solid waste for disposal.

In preparing this plan, data on locations of industries and projections of quality and quantity of liquid and solid waste from industrial discharges will be compiled. For industries that discharge sewage directly to waters of the region (discrete discharges), the limits on discharges will be checked to determine whether water quality is being protected. Possible sites for new industrial development will be identified, and new limits for each site will be recommended. For industries that discharge sewage to municipal sewerage systems (nondiscrete discharges), current limits ("pretreatment" requirements) will be analyzed according to classes of industries and location (canneries in the South Bay, for example). The effect of limits on municipal sewerage works will be determined, and changes will be recommended. Efforts to limit industrial

discharges will undoubtedly cause an increase in hazardous solid wastes because the sewage treatment works installed by industries convert water-borne pollutants to solid waste. The effect of this conversion will be considered.

Water conservation, reuse, and supply

Reasons for preparing the plan:

- Water conservation should be considered as a means of reducing the amount of wastewater in the region.
- Water conservation programs instituted by some water agencies are changing projected demands.
- The State Department of Health is developing criteria for wastewater reclamation and reuse for groundwater recharge; these criteria could make reuse more favorable in some areas than was thought when the Basin Plan was prepared.
- Changes in conservation and reuse could increase the need for regional or subregional cooperation for water supply.

Various water conservation programs will be considered to save water and to reduce sewage flows. Possibilities include:

- requirements for low-water-use household facilities
- water pricing and water metering in unmetered areas
- restrictions on types of home use (for example, lawn watering, car washing)
- requirements for industrial, in-plant recycling

Wastewater reclamation and reuse will be considered as a logical extension of improving municipal treatment works. Special attention will be given to industrial cooling and agricultural irrigation as uses for reused water.

Recommendations could include:

- reuse requirements for new “wet” industries
- reuse programs for existing industries
- programs leading to agricultural reuse both in and out of this region.

Solid waste

The solid waste management plan will include three interim plans: municipal waste, hazardous waste, and wastewater residuals. Even though hazardous waste and wastewater residuals constitute only a relatively small part of the solid waste stream, they can cause significant environmental problems. Therefore, separate interim plans will be prepared for both types of wastes.

Municipal waste -

Reasons for preparing the plan:

- About 10 million tons of municipal, industrial, and agricultural wastes were disposed of in the nine Bay Area counties in 1975.
- Past and present solid waste disposal sites have impaired the quality of surface and ground waters.
- Because most of the existing disposal sites will be filled completely in less than ten years, new disposal sites or disposal methods will have to be developed in the near future.
- There are no regional solid waste management programs for the various types of wastes, including hazardous and residual wastes.
- Alternative regional solid waste management systems and their environmental, social, and economic impacts have not been fully evaluated.

- Solid waste management is related to other nonpoint source control measures such as those for agricultural wastes and street sweeping.
- The goal of the Bay Area Solid Waste Management Study conducted by the State Solid Waste Management Board is to evaluate alternative regional management systems and their environmental, economic, and social impacts. However, the study has only eight months to tackle complex technical, governmental and public issues. The stated goal may not be met. Therefore, the output of the study should be reviewed in relation to the desired output of the 208 plan.
- Section 208 requires processes to control the disposal of all residual waste generated in areas where ground and surface water quality could be affected and of pollutants on land or in subsurface excavations in these areas.

Hazardous waste — Reasons for preparing the plan:

- The focus of the Group I Wastes Study being conducted by the State Solid Waste Management Board is on Group I wastes and Class I sites. Other Class II hazardous wastes that could have health or environmental impacts will not be considered.
- Existing Class I (hazardous waste) disposal sites may be affecting the quality of groundwaters on the Bay.
- The capacity of existing Class I sites will be exceeded within the planning horizon of this study. Other suitable sites are scarce.
- The amount of hazardous waste generated could increase significantly because of, for instance, the installation of wastewater pretreatment facilities by industries that discharge waste to sewer systems.

Wastewater residuals — Reasons for preparing the plan

- It is estimated in the Basin Plan that by 1985, 944 tons/day of raw sludge will be generated in the region.
- Planning for sewage sludge management has been directed toward short-range, uncoordinated solutions that may not be cost effective.
- The Regional Municipal Wastewater Solids Management Study* has the resources to develop a regional residual management plan. The 208 planning process should complement this effort.
- Section 208 of the Water Pollution Control Act Amendments of 1972 requires that a process be developed to control the disposal of all residual waste that could affect water quality.

According to state policy, the primary responsibility for solid waste management rests with local governments. Consequently, management plans have been developed by the nine Bay Area counties. These plans have identified issues to be addressed at the regional level: the evaluation of alternative, large-scale resource recovery systems; availability of Class I sites for disposal of dangerous wastes in the region; and the management of wastewater treatment residuals. Some of these issues are being examined in the Bay Area Solid Waste Management Study and the Class I site study of the State Solid Waste Management Board and the Regional Municipal Wastewater Solids Management Study.

During the two-year planning period, planning needs not covered in the other studies will be identified. The focus of the planning effort will be on these needs and on coordination among the county solid waste management plans.

*This study will begin in mid-1976 and will last for three years. The budget is approximately three million dollars. The study is a joint effort of East Bay Municipal Utilities District, San Francisco, San Jose, Central Contra Costa Sanitary District, and the Bay Area Sewage Services Agency.

Programs to promote source reduction and recycling of wastes will be recommended. Control measures for insuring that existing landfill sites meet state standards will be developed. Potential Class I disposal sites will be identified, and a method for establishing suitability will be developed.

Larger issues, such as multi-jurisdictional financing of resource recovery facilities or the acquisition of Class I sites will be considered in the continuing planning process.

Assessment of the environmental, social, and economic impacts of carrying out the management plans

An assessment of the impacts of carrying out the management plans is required by Section 208 of the Water Pollution Control Act Amendments of 1972. It will be consistent with state and federal laws and regulations and will be the same as assessments made during the two-year planning period (on which the evaluation of the alternative control measures will be based) except it will be more detailed. The assessment will include the following tasks:

- establishing evaluation criteria: Criteria will be derived in part from the public participation program.
- developing assessment methods: Techniques to measure impacts will be defined.
- measuring impacts of various control measures: Predictive techniques that convert control measures into identifiable impacts will be developed, and the impacts identified will be given public review.
- evaluating impacts
- producing interim outputs

The final assessment will determine the impacts of the control measures from all management

plans and will be the impact assessment for the plan.

Continuing Planning Program

The continuing planning program will be developed as the Environmental Management Plan is being prepared and will be put into operation at the end of the planning period. It will use the knowledge gained during the planning process and therefore its preparation is considered a “dress rehearsal” for the continuing planning process, which will be carried out after the two-year planning period ends. Thus, near the end of the planning process, the information developed will be analyzed and structured in a section of the final plan document(s) that will describe in detail the continuing planning process and the rationale for its development.

The functions of the continuing planning process will probably include, but not be limited to:

- identifying new environmental planning issues and the agency and actions (including formation of joint or new agencies, and changes in agency authority and funding) needed to deal with those issues
- providing routinely the kind of information relevant to environmental management that was developed during the preparation of the plan, including:
 - regional assessments of the social, environmental, and economic effects of new control measures or other actions
 - predictions of land use, employment, and population to serve as a basis for planning
- undertaking additional special studies pertaining to environmental management
- updating and possibly expanding the plan on a regular basis
- monitoring the implementation of the plan

- inventorying agency plans and actions that have significant environmental effects
- using and refining the working relationships among agencies, developed in this planning process, to solve environmental problems
- developing a citizen participation process for environmental management to inform the public about problems and progress and to receive input from the public on issues and actions to be taken

Priorities for the program

Priorities are indicated by the amount budgeted for groups of tasks. For example, surface runoff has a higher priority than municipal wastewater facilities.

Priorities are not set for specific products for the

following reasons:

- All products required by federal or state agencies will be produced.
- Additional specific products will be identified as planning proceeds; the intention is to produce management plans which are as specific as is appropriate, given the technical and other bases for the recommendations. If, at the end of two years, more detailed planning is required prior to implementation of any aspect of a management plan, this planning will be described in the continuing planning process.
- No management plan will be omitted, but some plans will be less detailed than others. The level of detail will depend on the budget for the plan, the level of detail of existing data and plans, and the unforeseen problems that could arise during the two years.

II. BASIS FOR THE PLAN

History of environmental
planning in the region 11

Problems to be addressed 13

Existing Federal and
State standards 17

Legislative mandates 19

History of environmental planning in the region

Progress toward solving different environmental problems has been made at different rates. Much has been done, for example, to control pollution from municipal and industrial wastewater treatment plants. Listed below are the major events in the improvement of water quality:

- In 1968 the Bay-Delta Water Quality Control Plan was completed by the State Water Resources Control Board. This plan outlined a regional system for treating and disposing of municipal and industrial waste. The plan was developed with little local involvement, and because of local opposition, most of its measures were not adopted.
- Beginning in 1970, under pressure from regulatory agencies, various groups of wastewater dischargers in the Bay Area joined together to develop subregional water quality management plans. Most of the plans have been completed, and facilities are being designed and constructed. In a few areas, however, planning is just beginning or is still in progress.
- In 1972 the state legislature created the Bay Area Sewage Services Agency (BASSA), which was charged with adopting a water quality management plan. Where local agencies are unwilling or unable to carry out the plan, BASSA has been given the authority to plan, design, construct, and operate the necessary facilities and to charge the area served.
- In 1972 the Federal Water Pollution Control Act Amendments were passed. The act called for basin plans for water quality control, set up a system of permits for all wastewater discharges, authorized grant funds for sewerage facility construction, and, in Section 208, required areawide waste treatment management plans for major urban/industrial complexes. The act specified the minimum levels of treatment required regardless of where wastewaters are discharged. It provided some of the funding and defined the necessary planning for pollution control facilities. Thus, the federal act fulfilled much of the implementation role originally conceived for BASSA. The State Water Resources Control Board allocates sewerage facility construction grants only for facility capacity consistent with low projections of population growth in basins with serious air quality problems; the five southern Bay Area counties constitute such a “critical air basin.”
- In 1975 the San Francisco Bay Basin Plan, authorized by the Water Pollution Control Act Amendments of 1972, was completed. For the most part, it endorsed the findings of the subregional wastewater studies and provided a basis for the granting of federal and state funds for the construction of sewerage facilities. The Basin Plan also identified surface runoff as the remaining significant source of pollution.
- Recently, the EPA has begun to require as a condition for major sewerage facilities grants that environmental impact statements include investigations of secondary environmental impacts (such as air quality impacts) and measures to mitigate adverse secondary impacts. The implementation of these measures has not yet been made a condition for receiving grants, but the intention of the EPA actions is clear: EPA would like to use the leverage provided by the construction grant program of the Federal Water Pollution Control Act Amendments to achieve other environmental goals mandated by federal law.

This brief history of measures to abate water pollution caused by municipal and industrial point sources in the region leads to three major conclusions:

- Implementable plans were not developed

until planning was done by local agencies — the agencies responsible for implementing the plans.

- Federal and state actions that spell out what should be done and provide grant funds to finance what should be done are the major factors in implementing water quality control measures.
- Water quality management planning is expanding to include other environmental concerns.

Listed below are the major events of air quality planning in the region:

- In 1955 the state legislature created the Bay Area Air Pollution Control District, the first regional agency dealing with air pollution in the nation. The authority of the district is largely limited to nonvehicular sources of air pollution, primarily industrial emissions and burning. Its regulations have substantially reduced pollutant emissions.
- In 1967 the state legislature established the Air Resources Board to deal with the state's air pollution problem. The Air Resources Board has authority over motor vehicle emissions.
- In 1970 the Federal Clean Air Act was passed. Under this act, the states are responsible for developing and submitting state implementation plans to EPA that contain measures to attain and maintain the national ambient air quality standards. The Air Resources Board is responsible for developing California's state implementation plan. The first California state implementation plan, submitted to the EPA in February 1972, was found to be deficient because it did not include adequate control strategies for attaining air quality standards.
- As a result of several court suits, EPA required California to submit a transportation control plan to correct some of the inadequacies of the state implementation plan. Because of the enormity of the task and the short amount of

time available, the state defaulted on its responsibility, and EPA was forced to promulgate a transportation control plan in many areas, including the San Francisco Bay Area. This November 1973 plan included gas rationing to achieve air quality standards.

- The state then exercised its option to prepare a transportation control plan. The California Department of Transportation (Caltrans) was designated to prepare the plan for the state; responsibility for the plan for the San Francisco Bay Area was delegated to the Metropolitan Transportation Commission. Together the commission and Caltrans completed a plan early in 1975. It was directed at short term measures that could be implemented by 1977, the date for compliance with national ambient air quality standards.
- A court order led to an EPA requirement for the identification of air quality maintenance areas — areas that have the potential for long-term air pollution problems. The San Francisco Bay Area was identified as such an area in June 1974 by the Air Resources Board and in September 1975 by the EPA. EPA regulations require the development of an air quality maintenance plan for each air quality maintenance area. This plan will include land use and transportation control measures and programs for enforcement.

Listed below are the significant events in solid waste management in the Bay Area:

- In 1965 ABAG completed a study of refuse disposal needs. This study discussed regional waste disposal sites, resource recovery, and federal or state funds for resource recovery research and demonstration projects.
- In 1971 the San Francisco Planning and Urban Renewal Association completed a solid wastes management system report for the Bay Area (now known as the Bay-Delta Project). The report recommended a demonstration project to test the feasibility of separating municipal wastes and transporting the composted organic part to a Sacramento-San Joaquin Delta island for

land reclamation and levee stabilization. The ABAG Executive Board endorsed the concept and invited local governments to join in initiating a demonstration project. A grant was obtained from EPA to plan a pilot project, an implementation program, and a financial plan. The project report, the *Bay Area Solid Waste Management Implementation Project*, was published in December 1973. Because of funding problems, the project has not yet been implemented.

- In 1972 the Nejedly-Z'Berg-Dills Solid Waste Management and Resource Recovery Act (SB-5) was passed requiring that all counties in the state prepare comprehensive countywide plans for solid waste management.
- In late 1975, the counties completed the preliminary solid waste management plans. The county plans are essentially limited to disposal of urban wastes within counties. They do not address multi-county resource recovery operations or the full range of wastes that must be considered in a regional management program such as construction and demolition wastes, hazardous and toxic wastes, wastewater residuals, agricultural and industrial wastes, dredge spoils, and floating debris.
- Within the next few months, a two-million

dollar, three-year study will begin to develop a plan for disposal of municipal sewage sludges.

In summary, the environmental management situation in the Bay Area is as follows:

- Much planning has been done for water quality management, and many of these plans are being implemented. However, pollution from surface runoff has not received much attention. The Environmental Management Plan will provide the first in-depth regional look at this source of pollution.
- Air quality planning and control have been difficult because of their effect on the way people live. Decisions must be made on what is required to achieve clean air and on what can reasonably be done. Water quality and solid waste programs should be consistent with what can be done to achieve clean air.
- Plans for municipal solid waste are being prepared for each county, and a comprehensive study on disposal of municipal sewage sludge will begin soon. Other types of solid waste will be considered in the Environmental Management Plan. All of these plans should be put together to form a regional solid waste plan. As a minimum, the framework for this regional plan should be developed during the next two years.

Problems to be addressed

The three maps in the pouch at the back of this volume summarize water quality, air quality and solid waste problems. The Environmental Management Plan will be directed at finding solutions to these problems.

The water quality map is based on information from the *Water Quality Control Plan for San Francisco Bay Basin* prepared by the State Water Resources Control Board. The air quality map is based on information in publications of the California Air Resources Board, the Bay Area Air Pollution Control District, the Metropolitan Transportation Commission, and ABAG. The solid waste map is based on the preliminary solid waste plans of the counties and on studies by the State Department of Health.

The water quality problems in the region are listed below under the management plan or special study in which the problems will be considered. The problems that will not be considered in this study are listed under a category called "other."

Surface runoff

- beneficial uses of Lake Merritt restricted due to bacterial contamination
- combined wastewater and stormwater overflows and bypasses restrict beneficial uses
- stormwater drainage adversely affects Lake Merced
- adverse impacts from recreational lagoons in Foster City and Bay Farm Island
- absence of a coordinated regional policy for the practical control of urban and non-urban stormwater runoff to minimize adverse effects on beneficial uses of water bodies
- runoff and dairy wastes in Marin and Sonoma enter Petaluma and Sonoma Rivers and their tributaries*

- runoff from dairy wastes and other nonpoint sources may endanger shellfish harvesting in Tomales Bay*
- runoff from copper slag heaps near Benicia enters Bay waters*

Municipal wastewater facilities

- adverse effects due to infiltration, inflow, bypassing and overflows related to treatment works during wet weather
- inadequate planning to determine the interrelation of water quality control facilities to future growth patterns and potential service areas
- assimilative capacity of water bodies (see comment under "Other")

Nonpoint sources

- insufficient data and impact assessment of nonpoint sources
- inadequate sanitary facilities at recreation locations to accommodate increased use in the region
- absence of facilities to accommodate vessel wastes from private, commercial and military water craft
- insufficient guidance and control measures for location, use, approval, maintenance and alternatives for septic tanks
- deficiency of regulations for control of erosion that impairs beneficial uses
- deficiency of regulations for control of construction related activities which impair beneficial uses

*May also be considered under "Other Nonpoint Sources."

- raw sewage discharged from houseboats into Richardson Bay
- Almaden, Calero and Guadalupe Reservoirs closed to fishing because of mercury contamination
- dairy wastes discharged into Petaluma River endanger domestic water supply
- runoff from septic tanks into Bear Gulch threatens water supply of Menlo Park
- septic tank runoff on Lake Hennessey watershed threatens water supplies

Industrial discharges

- uncertainty of method of discharge from Leslie Salt operations
- lack of a regional policy for future location of water oriented major discrete industrial discharges

Water conservation, reuse and supply

- continued inefficient usage of water supplies resulting from a lack of water conservation and reclamation measures
- insufficient guidance to protect and upgrade groundwater basins
- deterioration of groundwater supplies in Santa Clara Valley
- regeneration of water softeners in South Bay and Livermore Valley adds significant salts to potentially reclaimable water
- potential deterioration of groundwater supplies in Livermore Valley and Niles Cone due to salinity and organics from wastewater
- planning required to protect coastal streams for possible future water supplies

Solid waste

- lack of a regional management plan for the

proper collection, transportation, treatment, reclamation and disposal of hazardous and toxic wastes

- lack of a regional wastewater residuals management program to properly plan for and utilize this resource

Special studies

- uncertain impact of Delta outflows, including agricultural drainage, on the Bay system and future activities
- potential for increased salinity which could adversely affect fish and wildlife habitats
- inadequate regional policy on dredging and dredge disposal activities
- potential degradation of water bodies due to operational failure of wastewater treatment plants resulting from natural disasters, equipment failures, operational failures, or manpower problems
- sediments high in toxic metals
- significant annual fish kills
- periodic algal blooms and bacterial contamination in Bolinas Lagoon
- shellfish harvesting prohibited due to high levels of bacterial and/or heavy metal contamination

Other

- decline in Dungeness crab fishery. Information will be obtained from the State Department of Fish and Game, which is conducting a major study of the problem.
- uncertain assimilative capacity and future treatment required for discharge to Petaluma River and Sonoma Creek*
- uncertain assimilative capacity and future treatment required for discharge to lower Napa River*
- uncertain assimilative capacity and future

treatment required for discharge to western Delta*

- assimilative capacity of Suisun Marsh
unknown*

*Determination of assimilative capacity of water bodies may be done by the Regional Water Quality Control Board under their own ongoing planning efforts as an outgrowth of the Basin Plan. This determination could also be made under tasks on municipal wastewater facilities with assistance from the Regional Board.

Existing Federal and State standards

The goals cited in the Federal Water Pollution Control Act and the Clean Air Act provide general guidance for developing plans to protect the environment. The standards promulgated under the two acts also form a detailed basis for plan preparation. Under the Clean Air Act, national ambient air quality standards are a measure of the concentration of pollutants in the air. Water quality standards, called water quality objectives by the State Water Resources Control Board, are set by determining beneficial uses for each body of water. Standards are directly related to the goal of swimmable and fishable waters.

Water quality standards

Water quality standards in California are set to protect the beneficial uses of water. These are:

- municipal, industrial, and agricultural uses
- fish and wildlife propagation
- recreation
- navigation

Each of these uses except navigation has subcategories, resulting in a total of 21 beneficial uses. Different bodies of water have different beneficial uses. Different bodies of water have different beneficial uses. There are over one hundred different bodies of water in the Bay Area, most of which are fresh water streams and reservoirs. The others are the various zones of the San Francisco Bay (for example, the South Bay, south of San Mateo Bridge) the ocean, and the groundwater basins.

Water quality standards fall into two categories, numerical and narrative. An example of a numerical standard is that for dissolved oxygen: For all tidal waters in the Bay downstream of Carquinez Bridge, the minimum dissolved oxygen concentration is 5 milligrams per liter (mg/l). An example of a narrative standard is that for biostimulation (algae growth):

“All waters shall be maintained such that the level of biotic growth does not cause nuisance or adverse effects on any protected beneficial water use as a result of man’s activity. Whenever natural factors cause such biotic growths, then controllable factors shall not cause further increase.”

A ten-page list of all standards for the region is set forth in the Basin Plan of the State Water Resources Control Board. Two other types of requirements, closely associated with standards have also been adopted: discharge prohibitions and a nondegradation policy. Discharge prohibitions are what the phrase implies. For instance, there is a prohibition on the discharge of certain kinds of wastewater at any point where the wastewater will not receive a minimum initial dilution of at least ten to one. The nondegradation policy states that, regardless of the standards, the quality of waters shall not be lowered below existing quality, unless such a change is consistent with maximum benefit to the people of the State and will not unreasonably affect beneficial uses.

At present, water quality standards, discharge prohibitions, and the nondegradation policy do not directly address surface runoff. The allowable frequency of water pollution in the Bay caused by storm runoff has not been determined. However, the State Water Resources Control Board and EPA recommend that before setting standards consideration should be given to controlling storm runoff.

Air quality standards

The Clean Air Act contains a more direct approach for establishing air quality standards for the protection of public health and welfare. In early 1971, ambient air quality standards were set for six pollutants: suspended particulate matter, sulfur dioxide (SO₂), carbon monoxide (CO), hydrocarbons (HC), nitrogen dioxide (NO₂), and photochemical oxidants (Ox). The standards are

either primary or secondary: primary air quality standards are designed to protect public health; secondary standards are to protect public welfare (aesthetic impairment or property damage). These air quality standards were based on previously published federal air quality criteria that summarize the results of medical research on the effects of pollutant levels and exposures. As the standards were formulated, margins of safety were developed to insure protection of public health. To take into account variable meteorological conditions, the standards were not to be violated more than one time each year. Because of the different effects of the pollutants, time intervals were set for each pollutant level considered. Thus, a typical standard would be: "0.08 parts per million (ppm) for 1-hour average, not to be exceeded more than once per year."

A nondegradation policy similar to the one noted above has been proposed by EPA. The 1970 Clean Air Act requires the primary air quality standards to be achieved by 1977. Revisions to the act now under consideration by the U.S. Congress would allow for a more flexible schedule for complying with air quality standards.

Because the California standards set by the Air Resources Board are management objectives (as opposed to standards to be achieved and maintained) the federal standards will be of major concern in the air quality maintenance plan. It should be noted that the federal and state standards are quite similar.

Solid waste

The solid waste planning mandate is less direct than the mandate for air and water quality planning. According to the state policy, the primary responsibility for solid waste management rests with local governments. State policy outlines the minimum standards for solid waste handling and disposal and requires the preparation of county-wide solid waste management plans. These county-wide plans must contain the necessary intergovernmental and public/private arrangements for administration, financing, enforcement, operations, and continuing planning. The county-wide plans do not examine regional solid waste issues, which will, therefore, be included in the Environmental Management Plan.

Legislative mandates

The mandate to prepare an Environmental Management Plan for the Bay Area is derived from three sources: federal water and air quality legislation, federal and state policies developed under this legislation, and federal and state solid waste planning legislation.

Water quality

The Federal Water Pollution Control Act Amendments of 1972 state:

The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. In order to achieve this objective it is hereby declared that, consistent with the provisions of this Act —

- 1) It is the national goal that the discharge of pollutants into the navigable water be eliminated by 1985;
- 2) it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983;
- 3) it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited;
- 4) it is the national policy that Federal financial assistance be provided to construct publicly owned waste treatment works;
- 5) it is the national policy that areawide waste treatment management planning processes be developed and implemented to assure adequate control of sources of pollutants in each State.

The key goal is that swimmable and fishable waters be achieved wherever possible by 1983. The provisions of section 208 of the act that

pertain to water quality in the Bay Area are discussed below.

Section 208 of the act allows the Governor to designate agencies to prepare and implement areawide waste treatment management plans for a designated area. Within two years after the planning process is initiated, the designated agency — in this case ABAG — is to prepare a plan that must be certified by the State Water Resources Control Board and subsequently approved by EPA. This plan is to include, but not be limited to, control measures for improving water quality and the institutional and financial mechanisms necessary to implement control measures for the following sources of water pollution:

- municipal wastewater
- industrial wastewater
- storm runoff
- other nonpoint sources

The agency is also to assess the social, environmental, and economic impacts of carrying out the plan. The Governor, in consultation with ABAG, will designate a management agency or agencies to implement the approved plan. No federal grants for water pollution control facilities will be made to any agency not so designated, and no permit for this discharge of liquid wastes will be issued unless the discharge is consistent with the plan. The act requires permits for all discharges to navigable waters.

Air quality

The Clean Air Act of 1970 (P.L. 91-604) describes the air quality problem:

the growth in the amount and complexity of air pollution brought about by urbanization, industrial development, and the increasing use

of motor vehicles, has resulted in mounting dangers to the public health and welfare, including injury to agricultural crops and livestock, damage to and the deterioration of property, and hazards to air and ground transportation.

The goal of the act is to protect public health from air pollution resulting from the population growth in metropolitan areas. Plans prepared under the act may include land use and transportation controls. The act requires the preparation of state implementation plans describing how air quality standards are to be achieved and maintained.

The California Air Resources Board, assisted by the air pollution control districts in each air quality basin, has prepared the state implementation plan for California. For regions with difficult air pollution problems, such as the San Francisco Bay Area, additional plans were required. The transportation control plan, which became a revision of the state implementation plan, identified short-term control measures for achieving air quality standards, including restrictions on the use of the automobile. Few of these transportation-related measures have been implemented. The Air Quality Maintenance Plan is to develop long-term control strategies for attaining and maintaining air quality standards. When adopted by the California Air Resources Board and approved by EPA, the air quality maintenance plan will constitute a revision of the state implementation plan and will guide air quality decisions in the Bay Area.

Solid waste

Under the Federal Water Pollution Control Act Amendments of 1972, residual waste control and land disposal needs must be addressed in water quality management planning. In the regulations, residual wastes are defined as the “solid, liquid or

sludge substances from man’s activities in the urban, agricultural, mining and industrial environment remaining after collection and necessary treatment.”

Waste management planning includes:

- identifying controls to be established for the disposition of residual wastes that could affect water quality and describing actions to achieve such controls
- identifying the controls for the disposal of pollutants on land or in subsurface excavations to protect ground and surface water quality and describing the actions to achieve such controls

According to state policy, the primary responsibility for solid waste management rests with local governments.

County-wide plans for the management of all wastes generated and disposed of within the county or exported have been completed by the nine Bay Area counties in keeping with the guidelines established by the State Solid Waste Management Board.

The Environmental Management Plan will provide for coordination among individual plans and will address solid waste management issues that county plans identify as requiring a regional approach (for example, the evaluation of alternative, large-scale resource recovery systems, the availability of Class I sites for disposing of dangerous wastes, and the management of wastewater treatment residuals). Related state and regional studies, such as the Bay Area Solid Waste Management Project, the Class I Site Study (State Solid Waste Management Board), and the Regional Municipal Wastewater Solids Management Study (EBMUD as lead agency) will be incorporated as applicable.

III. PROCESS FOR PREPARING THE PLAN

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General assumptions

Discussed below are general assumptions used in developing the work program.

The plan should integrate the management of air quality, water quality, and solid waste.

This assumption implies that management plans for water quality, air quality, and solid waste should be consistent with the same projections of population, land use, and employment. It implies that consideration has been given to the adverse effects that carrying out one management plan has on carrying out another management plan. It also implies that options for management in each area have been assessed with respect to the same social, economic, and environmental criteria, and that selections of the best options have been made based on these assessments.

The plan should be integrated with the ABAG Regional Plan and other public policies.

This assumption implies that the Environmental Management Plan will be integrated with other programs and policies of the ABAG Regional Plan, and, secondly, a process will be developed for achieving compatibility between the Regional Plan and the plans of other governmental units.

The plan should emphasize implementation.

This assumption implies that potential implementing agencies should be involved in developing the plans as far as the budget and the necessity for integration allow. For this reason, local agencies are being asked to prepare surface runoff management plans. The budgets for the other plans are not large enough to accommodate similar levels of local involvement; for these plans, involvement of potential implementing agencies will be determined on a case-by-case basis.

This assumption also implies that the collection of new data will not be emphasized. The plan will be

based in large part on the compilation and analysis of existing data.

Federal and State standards and goals should be the starting point for plan development.

The implication of this assumption is that alternative plans should be formulated to meet standards and goals. Some of the existing standards are not specific; for others there is uncertainty about compliance schedules. For example, air quality standards and a timetable for compliance have been established but are now being reconsidered at the federal level. Water quality standards have been established, but they do not cover all aspects of the problem (for example, there are no specific objectives pertaining to surface runoff). In addition, water quality standards need not be applied rigidly if, under certain conditions, the social, economic, or environmental costs are too high. There are legal provisions for modifying some water quality standards after a thorough examination of their potential for attainment.

The existing governmental structure will be measured for its ability to plan and manage the environment.

This assumption implies that the existing structure will be analyzed to determine if there are adequate resources and an appropriate organization for planning and managing the environment. If the structure is found to be deficient, modifications will be developed as part of the Environmental Management Plan.

All water quality, air quality, and solid waste problems will not be solved by the Environmental Management Plan.

The EPA has emphasized developing a continuing planning process. This assumption

implies that the Environmental Management Plan will spell out how the continuing planning process will function. It also implies that the solution of certain problems can be deferred for later consideration in the continuing planning process.

Another implication of this assumption is that the working relationships among agencies and the public developed during the plan preparation should be used in the continuing planning process.

The Environmental Management Plan will build on existing plans.

The implication of this assumption is that existing plans, especially those for municipal (201) facilities and the county solid waste plans, will be accepted as a basis for the development of the Environmental Management Plan. Some plans may be re-examined, but for the most part, they will be accepted as they now stand.

The public must not only be given the opportunity to react to the plan but must be involved in its formulation.

The implication of this assumption is that citizen involvement must be continuous. It also implies that a comprehensive public participation

program, operating at the local and regional levels and supported by a sufficient budget, is required.

The social, economic, and environmental costs of the alternatives must be assessed before the plan is selected.

The implication of this assumption is that considerable effort should be spent to develop, on a consistent basis, information needed for such assessments. For example, to develop a surface runoff management plan, each county must assess alternatives according to the same criteria and using similar procedures. Therefore, ABAG will formulate guidelines for making the assessments that will be used in developing each management plan.

Emphasis should be placed on the management of surface runoff.

This assumption implies that a significant amount of the total effort should be spent to address this problem and that the budget should reflect this effort. The budget is sufficient to allow considerable substantive work by agencies in the counties to develop the management plan. This assumption also implies that much of the technical work by ABAG should support the surface runoff management plan.

Descriptions of task groups

This section consists of a description of each group of tasks, including background information for each management plan and special study. Reference should be made to the figure at the end of this section. The management plans will be developed first. There will be fourteen management plans (one for surface runoff management for each county except San Francisco* and six other management plans that will be developed at the regional level). These plans will be integrated into the regional Environmental Management Plan.

The regional perspective for the development of the surface runoff management plans is not confined to the integration of the plans. The regional supporting services will develop specifications for all management plans to insure that the plans are based on regionally consistent projections, that they consider a wide spectrum of alternatives (structural and nonstructural, including changes in land use practices), and that they assess these alternatives in a consistent manner.

Management plans

The management plans will consist of control measures and the institutional/financial mechanisms necessary to implement the control measures. All of the management plans, whether developed by local agencies or at the regional level will be developed in accordance with the guidelines set forth by ABAG. All of the management plans will be based on the same projections of population, land use, employment, and transportation. Assessment of alternatives will be consistent for all counties and for all management plans and will be based on assessment procedures developed by ABAG. The plans will be integrated into a regional environmental management plan during months 14 to 19 of the two year planning period. The

management plans are described in the following pages.

Surface runoff. Section 208 of the Federal Water Pollution Control Act Amendments of 1972 requires that control measures for surface runoff—a significant source of pollution in many urbanized areas in the country—be considered. The quantity of pollutants entering receiving waters in urban runoff is, in many cases, as great as the same quantity from municipal and industrial sources. In fact, calculations based on a hypothetical city indicate that runoff from the first hour of a moderate-to-heavy storm would contribute more to the pollutant load than would the city's sanitary sewage system during the same period of time.

Typical pollutants include: organic materials that contribute to the biochemical oxygen demand (BOD); suspended solids; pathogens; sediment from construction and erosion; air pollution fallout; gasoline additives; oil and grease; heavy metals from vehicular emissions; nitrogen and phosphorus from chemical fertilizers, animal wastes, leachates from leaves, and pesticides. Once the pollutants from surface runoff reach the receiving waters, they can cause water quality problems similar to those caused by municipal and industrial point source discharges.

Additional planning is needed for surface runoff in the Bay Area. The Basin Plan recommended an evaluation of the effect of urban and rural storm water drainage. The State Water Resources Control Board Resolution No. 75-33, designating an areawide planning area and agency for the Bay Area, also noted the need for areawide planning to deal with urban runoff.

As municipal and industrial point sources are brought into compliance with National Pollutant Discharge Elimination System (NPDES) permits and improved source control measures are instituted, surface runoff will constitute a larger percentage of the total annual pollutant load discharged into the San Francisco Bay system. For example, it was estimated in the

*Because San Francisco has "combined" sewers (that carry both sewage and storm runoff) the city has had to develop a surface runoff management plan to solve its sewage disposal problem.

Basin Plan that in 1970 surface runoff amounted to about 55 percent of the total heavy metal load discharged to basin receiving waters, compared with 30 percent from municipal and industrial point sources and 15 percent for other nonpoint sources. For the year 2000, it was estimated that surface runoff will contribute about 70 percent of the load, municipal and industrial sources 20 percent, and other nonpoint sources only 10 percent.

In the course of this study, runoff problems in both urban and rural areas will be examined. However, in most of the region greater emphasis will be given to urban runoff because it is a more important source of pollution. These plans will be prepared on a county-by-county basis by agencies in the county using funds provided by ABAG. Each of the nine Bay Area counties will prepare a surface runoff management plan, with the exception of San Francisco, which has already developed such a plan. The plans will emphasize near-term, nonstructural control measures to solve existing problems. The types of control measures to be considered range from land use controls to large structures for the storage and subsequent treatment of runoff (the latter will be considered only at the reconnaissance level). Street cleaning, refuse cleanup, and other housekeeping control measures will also be considered.

Air quality maintenance. The air quality problems of the Bay Area are well documented and generally recognized by its inhabitants. While significant progress has been made towards controlling air pollutant emissions, air quality standards are frequently exceeded. Furthermore, violations of these standards will continue given existing trends in land use development and population growth in the region.

Achievement of federal and state air quality standards will necessitate even more controls than those currently in existence or scheduled for implementation. This portion of the work program is a part of the ongoing air quality planning activities directed towards attainment and maintenance of clean air for the Bay Area.

In 1970, the Amendments to the Clean Air Act were passed. Under Section 110(a) (1) of this Act, the states were given primary responsibility for

developing and submitting to EPA state implementation plans which contained measures to demonstrate attainment and maintenance of the national ambient air quality standards. The Air Resources Board is responsible for developing California's plan. The first plan was found to be deficient by EPA because it did not include adequate control strategies for attaining air quality standards.

As a result of several court suits, EPA required California (and a number of other states) to submit a transportation control plan to correct some of the inadequacies of the state implementation plan. Because of the enormity of the task and the short amount of time available, the State defaulted on its responsibility, and EPA was forced to promulgate a transportation control plan in several regions, including the San Francisco Bay Area. The plan proposed by EPA for the Bay Area included gas rationing to achieve air quality standards.

Shortly thereafter, the State exercised its option to prepare its own transportation control plan. The California Department of Transportation (Caltrans) was given primary responsibility to prepare various California transportation control plans; responsibility for the plan for the Bay Area was delegated to the Metropolitan Transportation Commission. This Commission and Caltrans completed a plan early in 1975 directed toward short-term measures that could be implemented by 1977, the date for compliance with national ambient air quality standards.

A court order led to an EPA requirement for the identification of air quality maintenance areas, areas that have the potential for long-term air pollution problems. The San Francisco Bay Area was identified as such an area in June 1974 by the Air Resources Board and in September 1975 by the EPA. EPA regulations require the development of an Air Quality Maintenance Plan for each air quality maintenance area. This plan will consider land use and transportation planning measures as well as programs for more control of stationary sources.

In mid-1975, the Air Resources Board established the Bay Area Air Quality Maintenance Plan-Policy Task Force*, and initiated Phase I of

*This task force was composed of thirty-five representatives of local and regional governments, in addition to a wide variety of other Bay Area interests — conservation, business, industry, development, etc.

the air quality maintenance planning process. Phase I identified air quality problems and developed a work program to guide the Phase II planning efforts. Phase II will develop a regional air quality strategy for achievement of the clean air objectives. Thus, the results of Phase II will be the region's response to federal requirements for an Air Quality Maintenance Plan.

With the formation of the Environmental Management Task Force (EMTF), composed of a diverse number of public and private representatives from the Bay Area, the Air Quality Task Force adopted a resolution in its January, 1976, meeting which led to the integration of the 208 and air quality planning programs:

“Resolved, that the Phase I Policy Task Force hereby transfers the responsibility for completing Phase I of an Air Quality Maintenance Plan, . . . to the Environmental Management Task Force, . . . and . . . upon acceptance of said responsibility by the Environmental Management Policy Task Force, the Phase I (AQMP) Policy Task Force will immediately cease to exist.”

In addition to accepting responsibility to prepare an Air Quality Maintenance Plan in its charge, the EMTF formally resolved to accept all previous Air Quality Task Force responsibilities at its second meeting.

The air quality portion of the work program will guide the preparation of the Air Quality Maintenance Plan. The tasks in this part of the work program are those directly or indirectly related to air quality impact assessment, and thus eligible for funding under the 208 program.

The Air Quality Maintenance Plan will develop a time-phased solution to the air quality problems of the Bay Area. It will consider pollution from all sources — stationary, mobile, and area sources. The plan will be developed by a joint technical staff led by ABAG, with support from the Bay Area Air Pollution Control District, the Metropolitan Transportation Commission, and the State Air Resources Board. The plan will consider such control measures as the direct reduction of pollutant emissions from stationary and mobile sources through technological

controls, as well as land use and transportation control strategies.

Municipal wastewater facilities. A major product required in Section 208 is a description of future municipal waste treatment system needs. Specific requirements include:

- identification of municipal wastewater collection and treatment system needs for at least a 20-year period and an analysis of alternative waste treatment systems
- a demonstration that land is available for waste treatment facilities and land treatment and disposal systems
- projections of total capital funding required for construction
- a program to provide the necessary financial arrangements for the development of such systems.

Other requirements include the identification of waste load reductions needed to attain and maintain standards and effluent limitations, population to be served, and the results of planning funded through Section 201 grants.

Municipal wastewater facilities include flows from domestic, commercial, and some industrial sources. In most systems, hydraulic loads increase during wet weather because of infiltration and inflow into collection systems, which in turn cause overflows, bypassing, and a reduced level of treatment.

Pursuant to the Federal Water Pollution Control Act Amendments of 1972, municipal facilities are required to provide at least secondary treatment by 1977 and best practicable treatment by 1983. Planning has already been undertaken on both the national and regional levels to meet these goals.

During the past ten years, more than \$6 million has been spent on water quality management planning in the Bay Area. Most of this planning has been for municipal wastewater facilities either on the conceptual, basin-wide level (303 planning) or on a subregional level (201 planning). As a result, most significant, near-term water quality planning decisions regarding municipal

wastewater facilities have already been made. The State Water Resources Control Board, in adopting the Basin Plan for the Bay Basin, accepted the statement that “This basin plan, in conjunction with the facilities planning program under Section 201 of PL92-500* generally provides an adequate planning base for the control of municipal and industrial waste discharges (point-sources)”.

Currently, over fifty projects for municipal wastewater facilities, with estimated construction costs of between \$1 and \$2 billion are in various stages of planning, design, and construction. Planning is either completed or nearing completion in all subregions of the basin (with the exception of the Marin-Sonoma area, where facilities planning is underway). Since most of the planning for these projects is well underway, this management plan will build on existing planning and will be coordinated with current planning.

Other nonpoint sources. Federal mandate calls for the development of a process to deal with nonpoint sources of pollution, especially those from agriculture, forestry, and mine-related and construction activities. Pollutants from nonpoint sources enter water bodies over widespread areas, as they are often not collected in sanitary sewers nor controlled by municipal and industrial facilities. Nonpoint source pollutants in the Bay Area are discharged principally through surface runoff; smaller amounts are from septic tanks, dredging operations, construction erosion, vessel discharges, and oil spills. Waste loads are also transported by the Bay system from agricultural activities in the Central Valley by the San Joaquin and Sacramento Rivers.

The impact of pollutants from nonpoint sources in the Bay region has not been fully assessed. This management plan will examine the nonpoint sources of pollution not covered in other management plans and will proceed after an analysis of which nonpoint sources are regional problems. In general, the two-year product of this management plan will be less definitive, certainly in terms of structure, than the products of other management plans. The plan will be developed by

ABAG with involvement of the agencies especially concerned with the various types of nonpoint source pollution.

The following is a brief description of some nonpoint sources to be examined:

- 1) Individual wastewater disposal systems — Failing septic tank systems in some communities have caused water quality and public health problems. At present, there is no regional policy for the use or replacement of individual wastewater disposal systems.
- 2) Dredging — as stated in the Basin Plan, dredging activity which causes water quality problems must be studied further before formal requirements are imposed to effect adequate and reasonable control. Issues related to dredging will be examined under the section on special studies and the results will be incorporated into this management plan.
- 3) Construction — Such activities may disturb the soil or otherwise increase its susceptibility to erosion and can impair water quality by increasing turbidity and sediment in streams. Currently, however, there are no regional policies for controlling erosion from construction activities.
- 4) Vessel waste — Houseboat problems in the region are still unresolved; for example, raw sewage is still discharged from houseboats into Richardson Bay. In addition, there are no facilities for disposing of waste from pleasure craft and commercial vessels in compliance with existing regulations.

Industrial discharges. — Industrial discharges are a significant cause of water quality degradation. Like municipal discharges, industrial discharges include solids, organics, and nutrients. They also include heat, acids, alkalis, heavy metals, oils and greases, and other chemicals and hence, are generally more toxic than municipal discharges that have been given primary or secondary treatment. Industrial discharges can be grouped into two classes:

- discrete, if discharged by industry directly to receiving waters after treatment, and

* Public Law 92-500, The Federal Water Pollution Control Act Amendments of 1972.

- nondiscrete, if discharged to sewer collection systems, which then convey them with domestic wastewaters to publicly owned facilities for treatment and ultimate discharge.

Discharges of industrial wastes to receiving waters result in critical water quality problems. Discharges to sewerage systems cause treatment plant upsets and loss of efficiency. The Federal Water Pollution Control Act Amendments of 1972 addressed these problems by requiring NPDES permits that include deadlines for industries to provide particular treatment levels and pretreatment standards for wastes discharged into municipal systems. In addition, Section 208 of the law requires that treatment works be identified "to meet the anticipated municipal and industrial waste treatment needs of the area over a 20-year period." According to the EPA guidelines, alternatives considered for industrial dischargers connected to municipal systems should also be reflected in the alternatives for the municipal waste treatment systems.

There are 120 discrete industrial discharge points in the Bay Area and hundreds of nondiscrete discharge points. Approximately 90 percent of mass emissions from discrete industrial discharges can be attributed to less than thirty dischargers. Industries are concentrated in three areas: Antioch-Pittsburg, an area near Richmond, and Newark-Fremont.

In the Bay Area, discrete industrial discharges have been declining and municipal discharges increasing. These trends are due primarily to strong actions taken by regulatory agencies and to the realization by the industries that new processes, improved operations, recycling, and resource recovery are economically advantageous.

Even though the trend is a reduction in industrial flows, several problems have been identified that will require additional planning. These are listed below:

- Higher industrial treatment levels will result in greater amounts of hazardous and toxic waste residuals. (See Solid Waste Management Plan).
- Limits of discharge from existing and potential industrial areas are needed to insure that industrial development can proceed without impairing water quality.
- Pretreatment requirements for nondiscrete industrial discharges that are now being considered by regulatory agencies could affect industrial operations and the operation and capacity of municipal treatment plants.

The plan for industrial discharges will address these concerns, the requirements of Section 208, and the EPA guidelines. It will also take into account the improvements being made by industries and as a result of the regulatory actions of the Regional Water Quality Control Boards. This management plan will be prepared by ABAG with involvement of industrial organizations in the region.

Water conservation, reuse, and supply. In

California, large hydrologic projects have made possible the development of major urban centers. Currently, five million acre-feet of water per year is used in urban areas, or about 13 percent of the water used in the state. The demand for water is expected to increase as the population increases, and new water supplies are becoming more costly and difficult to develop. As a result, the California Department of Water Resources and the State Water Resources Control Board have begun to consider reclaimed wastewater as a potential water resource, and water conservation is being advocated.

Water demand in the San Francisco Bay region was approximately 1.9 million acre-feet in 1970. The water supply for the region will probably be adequate until 1990 although there will probably be water shortages in some areas because the distribution of supplies does not correspond to the projected demand.

This management plan will be prepared by a consultant to ABAG. The plan will consider water conservation primarily as a means of reducing wastewater flows. It will consider reclamation and reuse as a logical extension of increased degrees of treatment required to solve water pollution problems. Regional water supply will be considered as the logical extension of conservation measures and of reuse. This plan

will build on water conservation programs already being implemented by water agencies in the region. It will consider reuse for industrial water supply, ground-water recharge, and irrigation, both within and outside of the region.

Solid waste. Section 208 requires that control measures and disposal needs for residual wastes or solid wastes be identified.

In the federal regulations, residual wastes are defined as the “solid, liquid or sludge substances from man’s activities in the urban, agricultural, mining and industrial environment remaining after collection and necessary treatment.” In 1972 the Nejedly-Z’berg-Dills Solid Waste Management and Resource Recovery Act of California (SB-5) was enacted to establish and maintain solid waste management and resource recovery policies and programs in the state.

The SB-5 legislation specifies that the primary responsibility for solid waste management and planning shall rest with local government and requires the counties to prepare solid waste management plans. Accordingly, management plans have been developed by the nine Bay Area counties. These plans have identified issues to be addressed at the regional level: the evaluation of alternative, large-scale resource recovery systems; the availability of Class I sites for disposal of dangerous wastes in the region; and the management of wastewater treatment residuals. Some of these issues are being examined in the Bay Area Solid Waste Management Project, the Class I Site Study (State Solid Waste Management Board), and the Regional Municipal Wastewater Solids Management Study (EBMUD as lead agency). During the two-year planning period, other issues will be identified. Issues of multi-jurisdictional and public/private financing of facilities for resource recovery and hazardous waste management and the acquisition of Class I sites will be considered in greater detail in the continuing planning process.

The solid waste management plan will be developed by ABAG and will consist of three parts. The municipal waste part will consider what is commonly known as garbage or refuse, which constitutes most of the solid waste. This plan will build on the county solid waste plans

now being completed and will integrate the results of current state solid waste studies. The wastewater residuals part of the plan will be developed by other agencies carrying out a comprehensive regional program to develop a plan for the collection, treatment, and disposal of wastewater residuals. The hazardous waste part of the plan will build on recently completed studies of hazardous waste disposal sites. The solid waste management plan will consider regional resource recovery and recycling systems as well as land disposal.

Regional supporting services and data base

These groups of tasks will be carried out at the regional level to develop background information for the management plans and to assist in the development of the management plans.

Regional supporting services. This group of tasks consists of the development of population, land use, and employment projections that will serve as the basis for all of the management plans. It consists of the development and use of various analytical procedures, including mathematical models, which will be operated by ABAG in support of the management plans. It also consists of the regional analysis of institutions and their financial capability. Assistance will be provided to the management plans in developing institutional and financial mechanisms. Those mechanisms will be analyzed to see if they are adequate. Additional local or regional mechanisms will be developed if necessary. This group of tasks also includes the development of assessment procedures, provision of some of these procedures to the management plans, and the use of the remainder of the procedures to carry out assessments at the regional level. The assessment group of tasks will develop the candidate control measures to be considered in the development of management plans and the criteria against which these control measures will be measured.

Data base. This group of tasks includes the collection and analysis of water quality data by

county agencies. It includes the collection of existing environmental data by ABAG and the incorporation of these data into an environmental data management system, which will support the preparation of the environmental management plan and will be a key part of the continuing planning process. It also includes collection of local development policies by ABAG with assistance of local agencies. These policies will be the basis of population, land use, and employment projections.

Plan integration and administration

This group of tasks, performed by ABAG, involves the management and administration of the planning process, including contractual arrangements, budgets, modifications of the work plan, and preparations for meetings, especially those of the Environmental Management Task Force and Program Review Board. (see section on plan organization). Also included are the preparation of reports, mailouts, visual aids, etc., and the organization and coordination of the fourteen management plans (eight county plans for surface runoff, plus the other six regionally developed management plans). After the management plans have been developed, they will be integrated into a regional environmental management plan or plan alternatives. Those agencies, consultants, or ABAG staff which prepared the individual plans will be heavily involved in their integration. This group of tasks will also produce a draft environmental management plan to be the subject of the hearing and adoption process, and will collect recommendations from the management plans and from other studies concerning the continuing planning process. Based on this collection of recommendations and on separate analyses the continuing planning process will be developed and described.

Public participation

Public participation in the EMP program will be used to ensure active public participation to the fullest extent possible — consistent with the requirements of the Federal Water Pollution

Control Act, as amended (P.L. 92-500), and with the requirements of the Clean Air Act of 1970. Guidelines prepared by the U.S. Environmental Protection Agency state:

“The success of a 208 plan depends on its acceptance by affected units of local government. It is important that the general public in the 208 area be actively involved in plan development and that public participation in the later management phase of the plan be encouraged. Due to the complexity of the 208 planning, it is necessary to provide a structured program of public involvement to assure adequate exchange of information and opinion between the public and the planning agency.”

Similarly, proposed Federal requirements for Air Quality Maintenance Plans (40 FR49057 Oct. 20, 1975) state there must be: “assurances that there will be adequate provision for participation of the public in the development of the plan.”

In general, the public participation effort in the San Francisco Bay Area Environmental Management Plan program will be characterized by a *collaborative* approach with elected officials and professional staffs working in cooperation with the various public involved. This approach will emphasize making environmental decisions *with* the public — rather than *for* them, and will provide for public participation at both local and regional level.

An extensive public information program will be undertaken by ABAG to describe the planning program and to keep the public informed about its progress. This program will take the form of video and other media presentations — mailings, newsletters, films, exhibits, speakers, information depositories, publications, workshops, surveys, public presentations, and informal contacts with groups and individuals.

The public participation program will be monitored and evaluated to ensure that desired levels of participation are achieved. The program will be revised to remedy any deficiencies that may occur.

The EPA planning guidelines divide the public into three categories whose interests must be

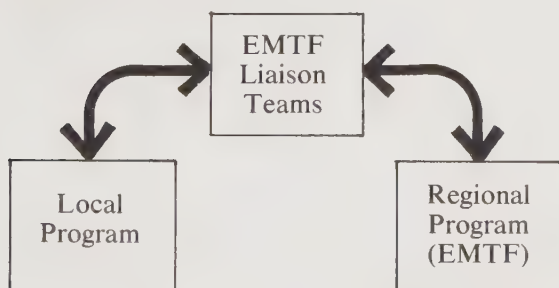
equitably balanced during the planning process. The three sectors are:

- government institutions and pollutant dischargers; those directly responsible for air, water and solid waste pollution control.
- special and public interest groups and opinion leaders, including conservation and environmental groups, academics, professional societies and others.
- the general public.

The public participation program links local citizen participation interests with a regional task force that is comprised primarily of institutional and special public interest group representatives.

The link between local and regional participation organizations will be Environmental Management Task Force Liaison Teams, comprised of representatives appointed from the Task Force. These teams will work with the lead agencies, and local citizen groups in each county.

EMTF Liaison Teams link local and regional programs . . .



Local participation programs will be developed by ABAG and/or lead agencies within guidelines established by ABAG. Local participation programs will be supported by ABAG and a public information program. In a number of Bay Area counties this may involve a coalition of existing citizen participation organizations and programs under the direction of a selected county local lead agency. In others, new programs may have to be established with ABAG's assistance. Where specific local issues arise during the planning process, special local task forces or

study groups may be given special assignments related to these issues.

The public participation program will distribute information about the planning process to the public, and will communicate public suggestions and concerns to those developing the plan. Public participation will be continuous throughout the planning process. In addition, there are five areas where public participation is an essential part of the planning process. Public comments will assist in the work of each of these areas:

1. Work Program Formulation
2. Assessment Criteria
3. Problems and Projections
4. Assessment of Management Plan Alternatives
5. Recommended Management Plan and Continuing Planning Process

Special studies

Each of the management plans is directed at a *cause* of pollution. In the sequence, "problem — cause — control," this planning process enters the sequence at the "cause" step and proceeds to investigate problems and controls related to that cause. This is the most efficient way of structuring the planning process; if the sequence were entered at the "problem" step, there would eventually be a number of relatively independent efforts directed at the same causes and controls.

However, entering the sequence at the "cause" step creates a tendency to give insufficient attention to problems. The purpose of the special studies, therefore, is to approach the sequence from the problem point of view and ensure that adequate attention is given to the more critical problems.

Seven important and sensitive issues have been identified for investigation. They are:

- Delta outflow
- Shellfish contamination
- Effects of toxicants (including heavy metals)
- Fish kills
- Dredging and disposal
- Contingency plans
- Eutrophication

Each study will rely on existing information and the opinions and advice of experts in the field. The overall objective of the studies will be to appraise the information in each of these areas, to draw conclusions, and to make recommendations for incorporation of the results into management plans.

Each study has three tasks: compile and review existing and available information; analyze existing information; and assist ABAG with integration of results into management plans. The tasks are scheduled for completion by months 4, 12 and 20, respectively.

The special studies will be done by either consultants or ABAG staff. Those done by consultants will be monitored and managed by ABAG staff. The distribution of the funds for these other studies will be determined as the scopes of work are negotiated with consultants. The special studies are described as follows:

Delta outflow. Water quality in the San Francisco Bay is influenced by the quantity and quality of outflow from the Sacramento-San Joaquin Delta. In the past, diversions of water from the Delta to other regions in the state have reduced the outflow into the Bay, changing the physical and biological characteristics of the Bay environment. Future diversions and agricultural drainage would further reduce the amount of fresh water flowing into the Bay, thereby increasing the strain on the estuarine ecosystem.

As the population of California and the demand for water continue to increase, changes in Delta outflow are expected. Sources of concern are:

- reduction in the periodic, large-scale exchange of fresh and salt water
- reduction in sediment inflow to the bay system
- salinity balance of the estuary
- protection of marsh lands, especially Suisun Marsh
- effects of agricultural drainage, especially nutrient additions

- alterations of seasonal outflow cycles, especially during critical and dry years
- fish and wildlife resources

Studies and data have been developed over the years on each of these concerns. This special study will compile information from all previous studies and from discussions and interviews with persons knowledgeable in these areas. Recommendations will be developed and incorporated into the management plans.

Shellfish contamination. There was a time when San Francisco Bay once had a thriving shellfish industry, the most productive of which was the oyster industry. In 1899 the oyster meat harvest was more than 2.7 million pounds per year, but by 1936 the harvest declined to 1,450 lbs/year. Contamination causing typhoid fever had already become common. In 1956, oyster harvesting was prohibited.

The California Department of Fish and Game has estimated that the harvest of shucked oysters could amount to 1.7 million gallons per year if contamination were eliminated.

The clam, bay shrimp, and crab industries have also declined; and, in most instances, harvesting of these shellfish has been prohibited. All forty-two shellfish beds in the Bay suitable for shellfishing have exceeded bacterial levels considered safe for human consumption.

In this study, records and studies on shellfish contamination in the Bay will be compiled to determine the location, frequency, and severity of this problem. Further, the type and sources of contaminants will be determined. Recommendations on mitigating measures will be incorporated into the management plans.

Eutrophication. Eutrophication is a natural ecological process in which the biological productivity of a body of water increases. When human activities introduce more nutrients through soil erosion, agricultural runoff, sewage, and industrial wastes, productivity can increase to the point where beneficial uses of the water are impaired. This speed-up of productivity is known as cultural eutrophication. Cultural

eutrophication has been apparent in many parts of San Francisco Bay. For example, there are large algal blooms in San Pablo Bay. Mats of green algae giving off odors of hydrogen sulfide and blackening lead-based paints have become a nuisance in several areas along the shores of the Bay, especially in the Albany tidal flats. There are similar problems in the South Bay below Dumbarton Bridge. In the Delta, floating algae clog waterways and reduce dissolved oxygen levels, possibly resulting in annual fish kills. Eutrophication has created ecological, economic and aesthetic problems in the Bay and there are indications that man's activities are speeding up the process.

This special study will compile studies that deal with eutrophication in the Bay in order to identify contributing factors and adverse impacts. Recommendations for alleviating the problems will be incorporated into the management plans.

Effects of toxicants (including heavy metals). Events such as the Minamata mercury poisoning in Japan and the discovery of carcinogens in water supply systems of many cities in the United States have called attention to problems of toxicant pollution. However, progress toward a solution of these problems has been slow because heavy metals and other trace elements are natural constituents of aquatic environments and little is known about the environmental and physiological processes that regulate concentrations of these chemicals in aquatic organisms. Furthermore, human responses to a given exposure of toxicant may vary, making it difficult to establish standards.

Toxicants are one of the most significant pollutants discharged into the San Francisco Bay, and mass emissions of these toxic substances must be prevented. The sources of these contaminants are domestic and industrial effluents, agricultural and urban runoff, and, according to some sources, airborne particulates.

This study will examine information on the extent and impact of toxicant pollution in the Bay, and experts in the field will be consulted. Findings will be incorporated into the management plans.

Fish kills. When water quality conditions exceed certain levels of tolerance, fish kills occur. The

causes of kills are accidental spills or continuous discharges of toxic substances; oxygen depletion due to algal blooms, benthic demands, organic materials in agricultural and urban runoff, point source discharges; pesticides in storm runoff; or rapid shifts of temperature or salinity. Frequently, fish populations are exposed to low water quality or sublethal concentrations, which will weaken their ability to withstand additional stress. Thus, fish are in some cases better monitors of water quality than standard sampling and testing programs, as these may fail to identify brief pollution episodes. The absence or death of sensitive species is a strong indication that biological conditions have deteriorated.

Between 1965 and 1970, thirty-five fish kills were reported around San Francisco Bay. These kills can be classified in two categories: The summer kill and the episodic kill. In Suisun and San Pablo Bays, large numbers of fish, usually striped bass, have died each July for the past twenty-five years. Recently, summer kills of sharks and rays have occurred off Alameda. The precise cause has not been determined, but heavy metals and other toxicants are prime suspects. The episodic kill is caused by spills and accidental discharges of toxic substances. For instance, more than 90,000 fish died as a result of the 1965 oil spill in Martinez. Both kinds of kills arouse public demands for preventive measures.

This study will collect records and studies on fish kills in the Bay in order to determine the frequency, severity, and location of these episodes. Causal relationships between pollutants, the season, and the fish kills will be investigated. Findings will be incorporated into the management plans.

Dredging and disposal. The economy of the San Francisco Bay Area depends to a large extent on the ports, marinas, and navigation channels in the Bay. These facilities must be dredged regularly because the Sacramento and San Joaquin Rivers transport eight to ten million cubic yards of sediment into the Bay each year. Only one-third of the material is carried to the ocean. However, dredging and disposal operations disturb and redistribute sediments — and this affects biological communities. Habitats are disrupted, turbidity increases, hydrogen sulfide and toxic substances are released, filter feeders

suffocate, and sessile organisms are smothered.

This study will examine the effects of dredging and disposal practices on marine life in the Bay. Existing studies will be reviewed, and discussions with knowledgeable persons will be conducted. Significant findings will be incorporated into the management plans.

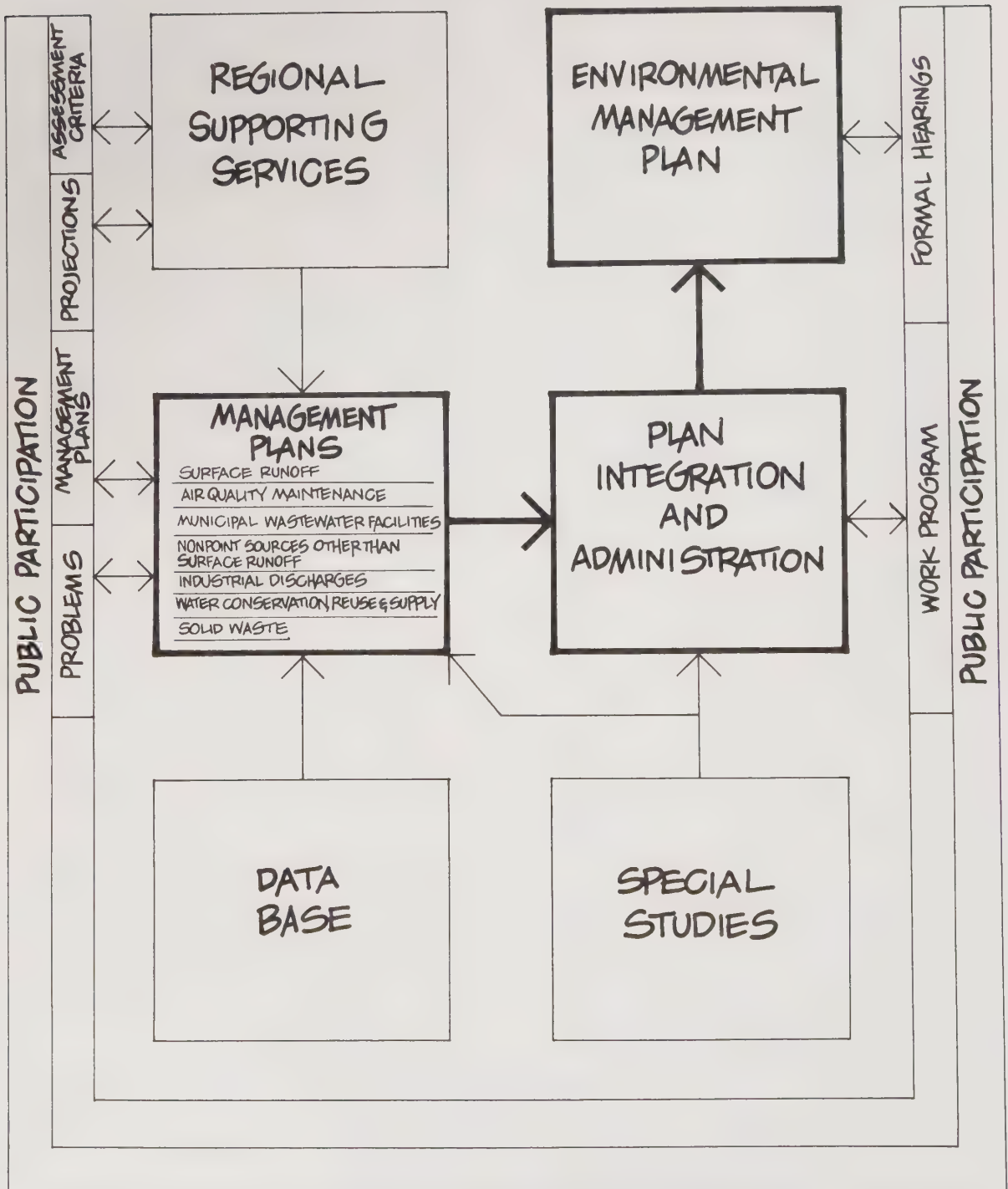
Contingency plans. Large quantities of hazardous materials are manufactured, stored, and transported in the Bay Area. In 1972 more than 340 manufacturers of chemicals and petroleum products with an estimated value of \$1.8 billion had operations in the Bay Area. A high percentage of these materials are hazardous. The presence and movement of these materials increase the possibility of spills and accidental releases. In addition, accidental discharges of poorly treated or untreated wastewater can occur. Incidents could be triggered by earthquakes, floods, explosions, mechanical failures, human error or civil disturbances (such as strikes at sewage plants). During the past three years, 83 spill incidents have occurred on Bay

Area highways and over 500 oil spills have been reported in the Bay waters. Such incidents cause property damage, threaten health, and life, and can be ecological disasters.

Contingency plans have been developed by state and federal agencies. In addition, a number of organizations such as Clean Bay, Inc., the San Francisco Bay Chapter of the Oceanic Society, many manufacturers, water and sewage agencies, and local governments have emergency or contingency plans for responding to water pollution episodes.

This study will examine contingency plans and assess their adequacy. Existing information will be examined and meetings will be held with persons having an interest in or responsibility for contingency plans. The study will identify the locations and sources of harmful materials, estimate the probability of occurrence, and determine the effectiveness of contingency plans. Recommendations for additional contingency planning will be made. Findings will be incorporated into management plans.

DEVELOPMENT OF THE ENVIRONMENTAL MANAGEMENT PLAN



Phases of plan preparation

This section describes the four phases of the plan preparation.

- Phase I (six months): plan organization, data collection and analysis, development of analytical techniques
- Phase II (eight months): preparation of management plans
- Phase III (six months): integration of management plans into regional Environmental Management Plan
- Phase IV (four months): hearings and adoptions

Phase I

This phase of the program comprises the first six months after EPA approval of the work plan and authorization to begin as well as some work that can be accomplished prior to the official beginning of the planning process. This phase includes the following major activities:

- Development of scopes of work for local agencies and consultants and executions of contracts.
- For the management plans, organization of the studies and analysis of problems.
- At the regional level, development of candidate control measures to be considered in each of the management plans and finalization of the criteria by which control measures will be assessed.
- For the citizen participation program, comments on the work plan followed by comments on the assessment criteria. These comments will be accommodated by modifying the work program and the assessment criteria accordingly.

- Existing data will be obtained and programs for the collection of new data will be developed.
- The analytical techniques used to assess the social, economic, and environmental impacts of alternative control measures will be developed, and specifications for the use of these techniques will be provided to the management plans.
- Background information will be collected on institutional authorities and their financial status.
- Collection of local policies on future development will be completed and incorporated into a series of regional projections on land use, population, and employment, which will serve as the basic input to the management plan.
- The special studies will produce a memorandum describing pertinent past work.

Phase II

This phase will last approximately eight months.

- The management plans will formulate and describe alternatives based on specifications developed in the first phase by ABAG. These alternatives will be assessed and evaluated also in accordance with the regional specifications using regionally developed techniques and other assistance from ABAG.
- Institutional/financial mechanisms will be developed for implementation of each of the control measures.
- Those aspects of the continuing planning process particular to the management plan

and other planning programs will be described.

- Citizens will comment on the basic projections. At the regional level, these comments will be incorporated into plan development.
- Also at the regional level, analytical techniques developed during the first six months will be in operation to provide information on demand to the management plans.
- Local assessments will be made and regional assessments will begin.
- Institutional/financial analysis will be provided by ABAG to the management plans.
- The development of the plans will be monitored at the regional level, and issues requiring resolution will be formulated by ABAG and presented to the Environmental Management Task Force.
- Data collection programs will be carried out, and during the last part of this phase, the environmental data management system will be in operation.
- The special studies conclusions will be factored into the management plans.

Phase III

This phase involves the integration of the separate management plans into an environmental management plan for the region. Listed below are the major activities in this phase:

- At the beginning of this phase, the management plans will have been prepared and forwarded to ABAG. ABAG will integrate these plans with the assistance of the local agencies, consultants, or ABAG staff involved in their preparation. Inconsistencies will be resolved and environmental management plan alternatives will be formulated and described.

- These alternatives will be assessed. The assessment will consist of a compilation of the separate management plan assessments and the continuation of regional assessments of the cumulative effect of carrying out all of the management plans.
- Public participation will focus on the separate management plans and will provide information to be used by ABAG in integrating these management plans.
- The institutional/financial mechanisms for each of the management plans and other studies will be compiled and analyzed, and the continuing planning process will be described.
- A draft environmental management plan report will be prepared that will be the subject of the next phase of the study.

Phase IV

This phase consists of the regional and state formal hearings and adoptions of the environmental management plan prior to its certification by the governor and presentation to the EPA administrator. The following major activities will take place during this phase:

- Citizens will comment on the draft plan at formal hearings.
- ABAG will note citizen comments and will prepare responses to these comments, which, in many cases, will result in modification of the draft environmental management plan.
- Hearings will be held at the regional level by the Environmental Management Task Force, Association of Bay Area Governments, Regional Water Quality Control Board and the Bay Area Air Pollution Control District.
- Hearings will be held at the state level by the Air Resources Board and the State Water Resources Control Board. It is likely that the hearings by several of these agencies will overlap.

- Each of these agencies will adopt the plan as modified by comments at formal hearings.
- A final plan consisting of the draft environmental management plan, a record of comments made at the hearing, and

responses to these comments (which will likely include modifications to the draft plan) will be forwarded to the governor for certification and subsequent presentation to the EPA administrator.

IV. ORGANIZATION FOR PREPARING THE PLAN

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Role of the Environmental
Management Task Force  43

Organization

The figure at the end of this section shows the organization for preparing the plan and the comment, certification, and approval process. The certification and approval process for the water quality parts of the plan is set forth by law or by well-established practice. For the air quality parts, the certification and approval process is not firmly established. The approval process for the solid waste parts of the plan will be worked out during the preparation of the plan.

Environmental Protection Agency

EPA will approve the plan after it has been certified by the State Water Resources Control Board (the governor's agent for certification of the water quality aspects) and approved by the State Air Resources Board. The plan will then become the basis for EPA action in the region, including the distribution of construction grants for publicly owned wastewater treatment works.

State Water Resources Control Board and Regional Water Quality Control Board

The State Board is the Governor's certifying agent for the water quality management parts of the Environmental Management Plan. Typically, the State Board requires that the Water Quality Control Board for the San Francisco Bay Region adopt the plan before the State Board certifies it.

State Air Resources Board

The State Air Resources Board must approve the Air Quality Maintenance Plan before it is approved by EPA. This plan will become part of the State Implementation Plan for air quality.

ABAG Executive Board and Regional Planning Committee

The Regional Planning Committee will recommend that the Executive Board approve the Environmental Management Plan as an element of the Regional Comprehensive Plan. Also, agencies farther up the certification and approval

hierarchy will probably require ABAG Executive Board adoption before they act.

Metropolitan Transportation Commission and Bay Area Air Pollution Control District

MTC is responsible for the transportation element of the Regional Comprehensive Plan. This element is closely related to the Air Quality Maintenance Plan. The Air Pollution Control District will be one of the implementing agencies for the Air Quality Maintenance Plan. The air quality aspects of the Environmental Management Plan must be reviewed by both agencies before it is adopted by the State Air Resources Board.

Environmental Management Task Force (EMTF)

This is the key policy-making body for the preparation of the Environmental Management Plan. The composition of the task force includes representatives from cities and counties, citizen groups, and special interest groups. It was charged by the EPA Regional Administrator with the responsibility for preparing the Environmental Management Plan (copies of this charge are available on request from ABAG).

ABAG Staff

Key ABAG staff members will manage the plan on a day-to-day basis under the direction of the Environmental Management Task Force. Technical staff will do much of the work of preparing the plan.

Program Review Board

This group of representatives of the following agencies will provide ABAG with guidance on State and Federal policies so that an Environmental Management Plan is developed that is consistent with these policies:

- EPA
- State Water Resources Control Board

- Air Resources Board
- Office of Planning and Research
- Regional Water Quality Control Board

Advisory committees

These committees will advise the EMTF and ABAG management staff. The committees will include persons with expertise from public agencies, citizen groups, and others.

Lead agencies in the counties

Each county will have a lead agency or group of agencies responsible for the work performed in the county under contract to ABAG.

Other agencies in the county

These agencies will provide support to the lead agency or agencies.

Other regional, State, and Federal agencies

The plan will be prepared with the cooperation of other agencies. The Corps of Engineers is studying the effect and control of surface runoff. These and other Corps studies will be coordinated with the preparation of this plan.

Staff support will be provided by EPA, the Bay Area Air Pollution Control District, the Regional Water Quality Control Board, the State Water Resources Control Board, and the Bay Area Sewage Services Agency. The U.S. Geological Survey is conducting data collection and analysis programs that will be coordinated with the plan preparation. The Bay Conservation and Development Commission will provide data and advice. The Metropolitan Transportation Commission will assist in transportation and air quality analysis. The Residuals Study Group (East Bay Municipal Utilities District, the City of San Jose, the City of San Francisco, Central Contra Costa County Sanitary District, and BASSA) will prepare a regional residuals plan.

Consultants

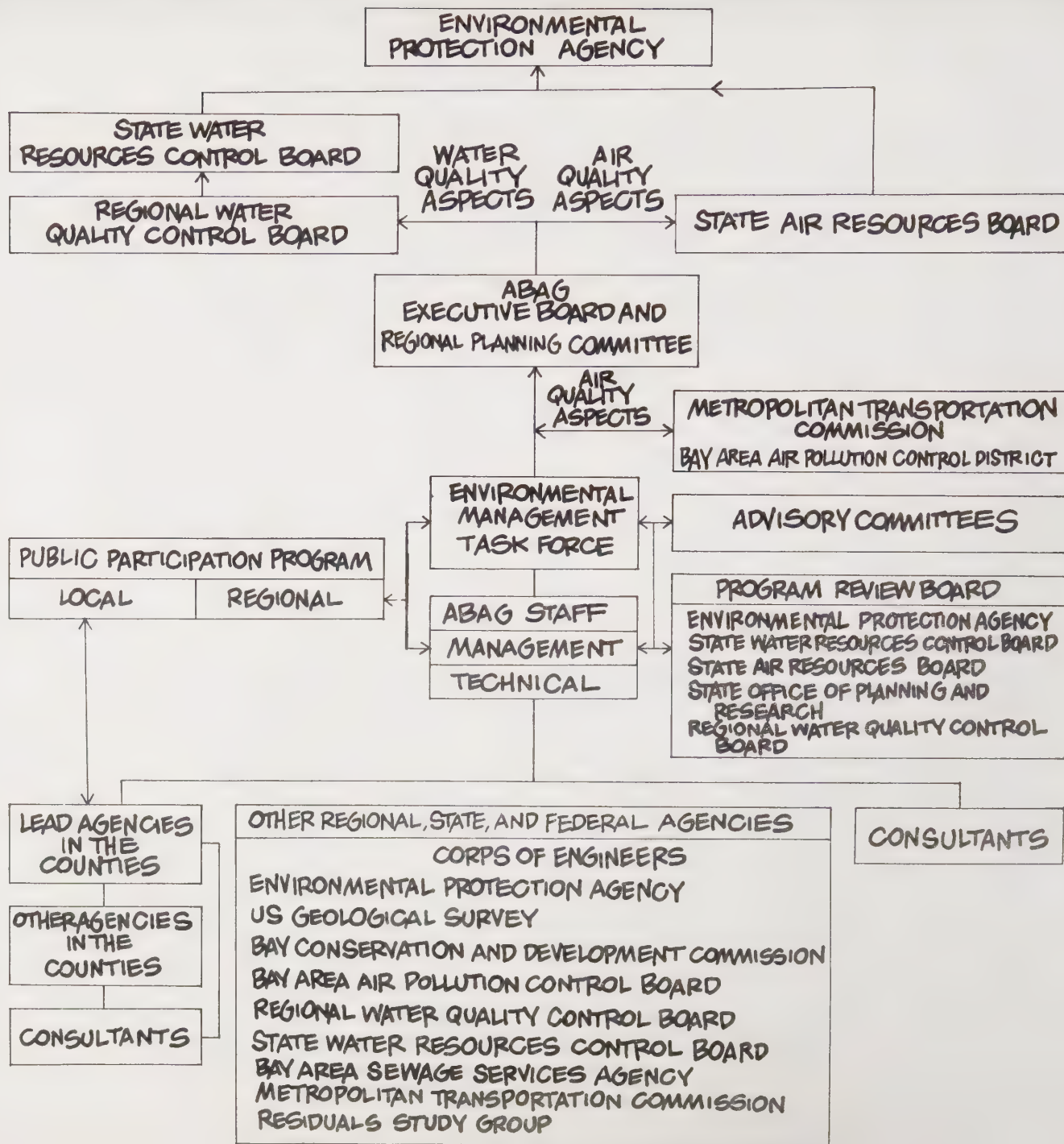
ABAG and local agencies will use consultants either to prepare management plans or to provide specialized technical services in support of the preparation of the Environmental Management Plan.

Public Participation Program

The program will function at the local and regional levels to prescribe and comment on the preparation of the Environmental Management Plan.

FORMAL COMMENT
APPROVAL, AND
CERTIFICATION

PLAN
PREPARATION



Role of the Environmental Management Task Force

Public decisions cannot be made solely on technical grounds. Technical measures to solve air quality, water quality, and solid waste problems require direct expenditures by public and private organizations and can also have indirect effects on the economy, environment, and social characteristics of the region. The public must be made aware of the benefits and also of the effects of these technical measures if agreement on implementation plans is to be achieved. Provision must be made for extensive public involvement and contact with citizen groups.

The Environmental Management Task Force established by the ABAG Executive Board, has been given the responsibility of considering citizen interests, local policies, technical controls, and public costs. The members of the task force are elected officials from counties, cities, and wastewater districts and representatives of interest groups, including business, labor and conservation.

The role of the task force will, in general, be to make decisions concerning the implementation of the plan and to determine the structure and scope of the continuing planning process. The ABAG staff will be responsible for developing alternatives and for assessing the alternatives with respect to their social, economic, and environmental effects. The role of the task force will be to judge this information and to select the best courses of action.

Among the key policy decisions the EMTF is expected to consider are:

- how the Bay Area can best meet the federal requirement that air quality standards must be achieved “as expeditiously as possible”
- how the Bay Area can meet the federal requirement that the goal of fishable — swimmable waters be achieved “wherever attainable” by 1983
- which agencies are responsible for implementing air, water, and solid waste controls, including modifications to existing statutory authority or to existing governmental capability to plan and manage the environment
- the costs of meeting water quality standards, including the distribution of costs among measures to control various sources of pollution (Now much of the burden for improving water quality is placed on point sources. The question of whether some of the cost be shifted to surface runoff or other sources will be addressed.)
- in air quality management, the degree of emphasis on stationary and mobile source controls, based on information regarding costs, effectiveness, and other public objectives
- how best to satisfy equity concerns when applying air pollution controls, especially among population groups such as the poor, the elderly, and the young (There are legal and equity concerns to be satisfied in the transport of pollution from one area of the region to another. These determinations would involve the future uses of land (growth) and transportation development.)
- the extent to which state and federal grants for water pollution control should be conditioned on the implementation of air quality mitigation measures by local agencies
- the degree of involvement of environmental management planning in other on-going planning, including current municipal wastewater facilities (201) planning

V. BUDGET

BUDGET

BUDGET SUMMARY	BUDGET	BUDGET ALLOCATION BY RESPONSIBLE AGENCIES			
		LOCAL AGENCIES	OTHER AGENCIES	ABAG/EMTF	CONSULTANT SERVICES*
MANAGEMENT PLANS					
Surface Runoff	\$ 708,000	\$708,000			
Air Quality Maintenance (Plan Formation)	280,000		\$95,000 (BAAPCD)	\$ 185,000	
Municipal Wastewater Facilities	90,000			90,000	
Other Nonpoint Sources	48,000			48,000	
Industrial Discharges	90,000			90,000	
Water Conservation, Reuse, and Supply	100,000				\$100,000
Solid Waste	66,000			66,000	
DATA BASE					
Data Collection Coordination and Data Management System	218,000			209,000	9,000
Data Collection	176,000	176,000			
REGIONAL SUPPORTING SERVICES					
Population, Land Use, Employment and Transportation Projections	218,000		80,000 (MTC)	138,000	
Water and Air Quality Analytical Procedures	285,000		24,000 (BAAPCD)	24,000	237,000
Assessment and Evaluation	337,000			320,000	17,000
Institutional/Financial Analysis	121,000			97,000	24,000
PUBLIC PARTICIPATION	345,000	85,000		260,000	
PLAN INTEGRATION AND ADMINISTRATION	360,000			360,000	
SPECIAL STUDIES	180,000**			28,000	152,000
Delta Outflow					
Shellfish Contamination					
Eutrophication					
Effect of Toxicants					
Fish Kills					
Dredging and Disposal					
Contingency Plans					
CONTINGENCY	166,000			216,000	
STATE WATER RESOURCES CONTROL BOARD CONTRACT	165,000		215,000 (SWRCB)		
PREPARATION OF WORK PROGRAM AND INITIAL WORK	300,000			255,000	45,000
TOTAL AMOUNT OF GRANT	<u>\$4,303,000</u>	<u>\$969,000</u>	<u>\$364,000</u>	<u>\$2,386,000</u>	<u>\$584,000</u>

*Excluding consultants which counties might choose to use.

**\$152,000 will be distributed among the first six Special Studies in the process of negotiating scopes of work with consultants, and \$28,000 will be for contingency plans.

About ABAG

ABAG is owned and operated by the local governments of the San Francisco Bay Area. It was established in 1961 to meet regional problems through the cooperative action of its member cities and counties. At present 85 of 93 cities and 7 of 9 counties in the Bay Area are members. Twenty-five special districts, regional agencies and other government agencies are non-voting, cooperating members. ABAG serves an area of about 7 thousand square miles and nearly 5 million citizens.

ABAG is the areawide comprehensive planning agency for the Bay Area. Its approved Regional Plan provides a policy guide for planning of the region's:

- air quality
- airport systems
- community development
- comprehensive health services
- criminal justice
- employment
- growth management
- housing
- human services
- ocean coastline use
- open space
- seaports
- seismic safety
- solid waste management
- transportation
- water resources
- water quality

Activities include developing long-range growth policies, adopting a regional housing element, initiating community development goals and policies, and implementing a plan to preserve natural resources and manage lands in the Bay Area. ABAG also keeps citizens informed and encourages citizen participation in regional planning.

A major program during 1976 and 1977 will be the

development by ABAG and other agencies of areawide air and water quality management plans for the Bay Area. Also to be addressed are regional solid waste management issues. The \$4.3 million effort is funded by the Environmental Protection Agency under Section 208 of the Federal Water Pollution Control Act Amendments of 1972.

ABAG also works jointly with other regional agencies such as the Metropolitan Transportation Commission, the Bay Area Air Pollution Control District, the Bay Area Comprehensive Health Planning Council, the Bay Area Sewage Services Agency and the Coastal Zone Conservation Commissions.

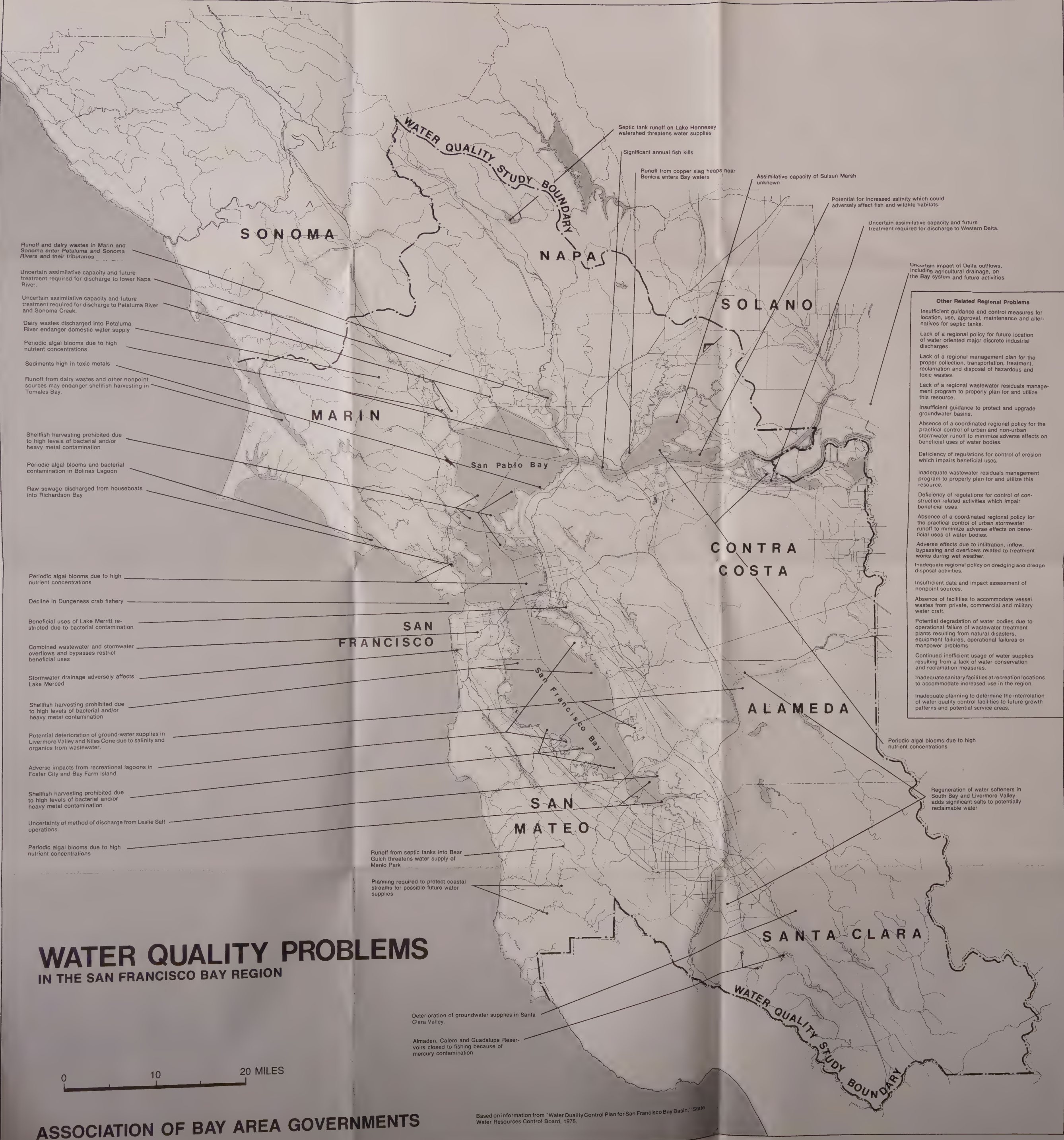
ABAG policy is set by the General Assembly, which meets at least once a year. Delegates are elected officials from member cities and counties.

ABAG's Executive Board of 36 meets monthly to make operating decisions, consider grant applications, control expenditures and recommend major policies to the General Assembly. Executive Board members are appointed by county boards of supervisors, mayors and city councils. Membership on the Executive Board reflects the population size of each county.

The work of ABAG's staff of 110 is directed by the Executive Board and by policy committees that deal with various program and interest areas.

ABAG is the Federally designated areawide clearinghouse for the Bay Area. Reviews and comments on applications from local jurisdictions cover more than 180 different Federal assistance programs. During 1975, ABAG reviewed more than 1,000 local applications totalling \$576 million in Federal funds and \$741 million in total funds.

Development proposals with potentially significant effects on the region may be examined in their early stages — before Federal grant applications are made — by ABAG's system of review panels.



Runoff and dairy wastes in Marin and Sonoma enter Petaluma and Sonoma Rivers and their tributaries

Uncertain assimilative capacity and future treatment required for discharge to lower Napa River.

Uncertain assimilative capacity and future treatment required for discharge to Petaluma River and Sonoma Creek.

Dairy wastes discharged into Petaluma River endanger domestic water supply

Periodic algal blooms due to high nutrient concentrations

Sediments high in toxic metals

Runoff from dairy wastes and other nonpoint sources may endanger shellfish harvesting in Tomales Bay.

Shellfish harvesting prohibited due to high levels of bacterial and/or heavy metal contamination

Periodic algal blooms and bacterial contamination in Bolinas Lagoon

Raw sewage discharged from houseboats into Richardson Bay

Periodic algal blooms due to high nutrient concentrations

Decline in Dungeness crab fishery

Beneficial uses of Lake Merritt restricted due to bacterial contamination

Combined wastewater and stormwater overflows and bypasses restrict beneficial uses

Stormwater drainage adversely affects Lake Merced

Shellfish harvesting prohibited due to high levels of bacterial and/or heavy metal contamination

Potential deterioration of ground-water supplies in Livermore Valley and Niles Cone due to salinity and organics from wastewater.

Adverse impacts from recreational lagoons in Foster City and Bay Farm Island.

Shellfish harvesting prohibited due to high levels of bacterial and/or heavy metal contamination

Uncertainty of method of discharge from Leslie Salt operations.

Periodic algal blooms due to high nutrient concentrations

Runoff from septic tanks into Bear Gulch threatens water supply of Menlo Park

Planning required to protect coastal streams for possible future water supplies

Deterioration of groundwater supplies in Santa Clara Valley.

Almaden, Calero and Guadalupe Reservoirs closed to fishing because of mercury contamination

Septic tank runoff on Lake Hennessy watershed threatens water supplies

Significant annual fish kills

Runoff from copper slag heaps near Benicia enters Bay waters

Assimilative capacity of Suisun Marsh unknown

Potential for increased salinity which could adversely affect fish and wildlife habitats.

Uncertain assimilative capacity and future treatment required for discharge to Western Delta.

Uncertain impact of Delta outflows, including agricultural drainage, on the Bay system and future activities

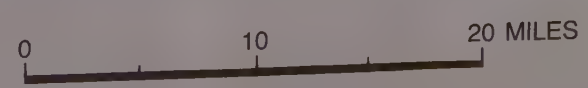
Other Related Regional Problems

- Insufficient guidance and control measures for location, use, approval, maintenance and alternatives for septic tanks.
- Lack of a regional policy for future location of water oriented major discrete industrial discharges.
- Lack of a regional management plan for the proper collection, transportation, treatment, reclamation and disposal of hazardous and toxic wastes.
- Lack of a regional wastewater residuals management program to properly plan for and utilize this resource.
- Insufficient guidance to protect and upgrade groundwater basins.
- Absence of a coordinated regional policy for the practical control of urban and non-urban stormwater runoff to minimize adverse effects on beneficial uses of water bodies.
- Deficiency of regulations for control of erosion which impairs beneficial uses.
- Inadequate wastewater residuals management program to properly plan for and utilize this resource.
- Deficiency of regulations for control of construction related activities which impair beneficial uses.
- Absence of a coordinated regional policy for the practical control of urban stormwater runoff to minimize adverse effects on beneficial uses of water bodies.
- Adverse effects due to infiltration, inflow, bypassing and overflows related to treatment works during wet weather.
- Inadequate regional policy on dredging and dredge disposal activities.
- Insufficient data and impact assessment of nonpoint sources.
- Absence of facilities to accommodate vessel wastes from private, commercial and military water craft.
- Potential degradation of water bodies due to operational failure of wastewater treatment plants resulting from natural disasters, equipment failures, operational failures or manpower problems.
- Continued inefficient usage of water supplies resulting from a lack of water conservation and reclamation measures.
- Inadequate sanitary facilities at recreation locations to accommodate increased use in the region.
- Inadequate planning to determine the interrelation of water quality control facilities to future growth patterns and potential service areas.

Periodic algal blooms due to high nutrient concentrations

Regeneration of water softeners in South Bay and Livermore Valley adds significant salts to potentially reclaimable water

WATER QUALITY PROBLEMS IN THE SAN FRANCISCO BAY REGION



ASSOCIATION OF BAY AREA GOVERNMENTS

Based on information from: "Water Quality Control Plan for San Francisco Bay Basin," State Water Resources Control Board, 1975.

GENERAL ENVIRONMENTAL EFFECTS OF SOLID WASTES

Water Quality Effects

Impairment of surface and groundwater quality due to inadequate management practices for the storage, collection, transportation, and disposal of municipal, industrial, agricultural, and other special wastes, such as hazardous wastes, sludges, and street sweepings.

Air Quality Effects

Impairment of air quality due to uncontrolled burning of solid waste.

Impairment of air quality due to emissions from solid waste collection and transportation vehicles.

Public Health and Safety Effects

Production of flies, rodents, and other vectors of disease as a result of poorly managed solid waste.

Transmission of pathogens and parasites through sewage sludge and other hazardous waste.

Occurrence of occupational or safety hazards such as injuries from fires and explosions, traffic hazards, and contact with hazardous wastes.

Aesthetic and Nuisance Effects

Annoyance caused by flies, gnats, and other flying pests.

Noise, odors, smoke, and unsightliness associated with the handling of wastes.

Ecological Effects

Disruption of the estuary by filling the shallow reaches, mudflats, and marshes of the Bay.

Disruption of the established botanical and zoological communities by the filling of canyons.

Resource Depletion Effects

Acceleration of resource depletion due to increase in annual waste production and slow progress in resource recovery from solid waste.

SPECIFIC REGIONAL PROBLEMS

An estimated 10 million tons of municipal, industrial, and agricultural wastes needed to be disposed of in the nine bay area counties in 1975.

The location of past and present solid waste disposal sites in close proximity to the Bay-Delta ground and surface waters has resulted in impairment of water quality.

Since most of the existing disposal sites will be completely filled in less than ten years, new disposal sites or disposal methods have to be developed in the near future.

There are no regional solid waste management programs for various types of wastes, especially those for hazardous wastes and residual wastes.

Alternative regional solid waste management systems and their environmental, economic, and social impacts have not been fully evaluated.

There are no stable markets for products of county and subregional source separation and resource recovery systems.

There are no statewide standards covering measuring of wastes and data collection, recording, and reporting.

There is no coordination of reporting requirements of regional and state agencies for landfill site operations.

SOLID WASTE PROBLEMS IN THE SAN FRANCISCO BAY REGION

- PAST AND PRESENT SOLID WASTE DISPOSAL SITES (117)
- SITES WHERE SOLID WASTE DISPOSAL HAS CAUSED WATER QUALITY PROBLEMS (42)
- SITES WHERE HAZARDOUS WASTE DISPOSAL HAS CAUSED WATER QUALITY OR NUISANCE PROBLEMS (4)
- * ESTIMATED TONNAGE REQUIRING DISPOSAL IN 1975

0 10 20 MILES

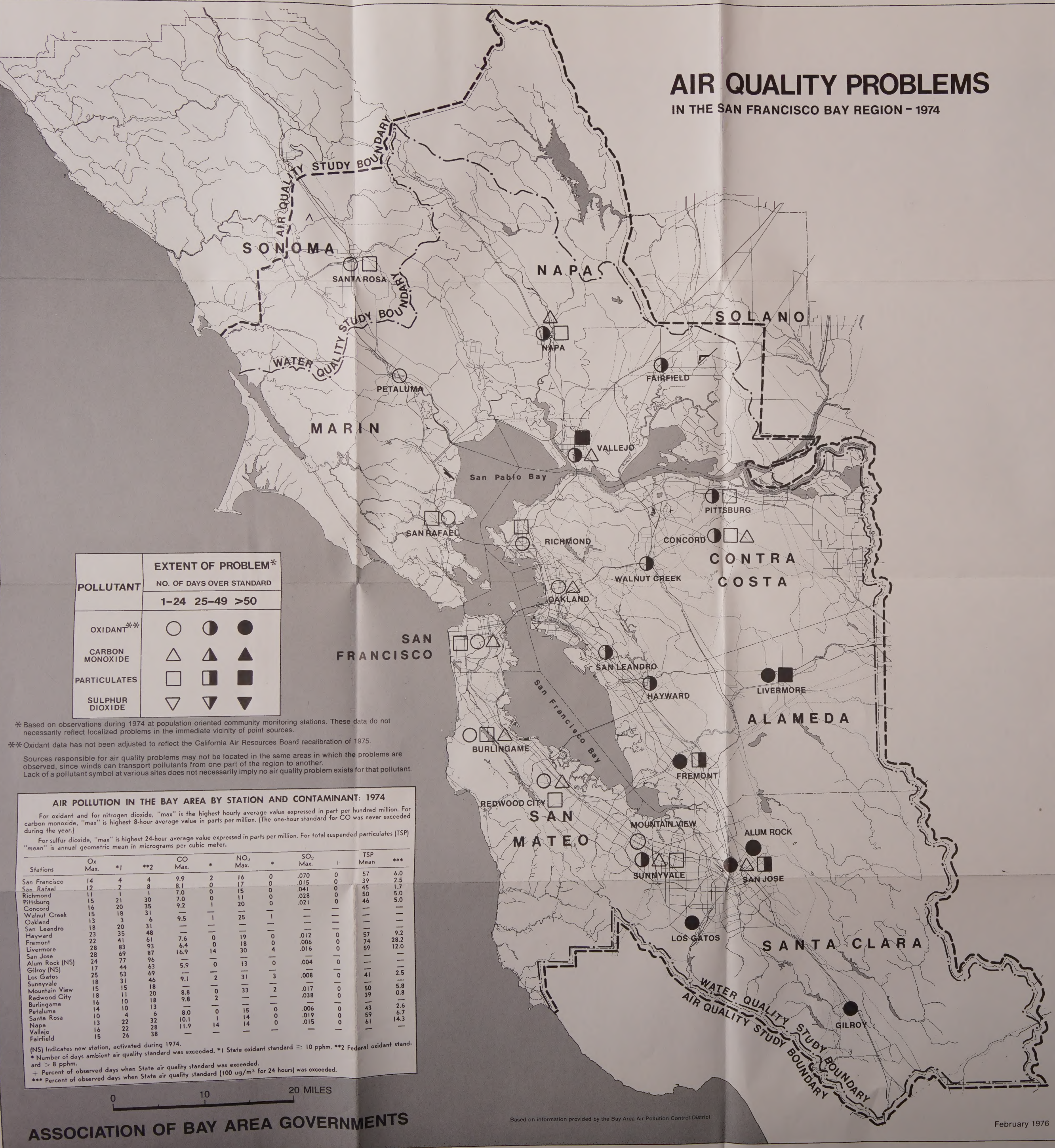
ASSOCIATION OF BAY AREA GOVERNMENTS

Based on information from the Preliminary county solid waste management plans; the "Solid Waste Management Study, 1968," State Department of Public Health, 1971; and the "Solid Waste Disposal in the San Francisco Bay Region, California," U.S.G.S., 1972.

February 1976

AIR QUALITY PROBLEMS

IN THE SAN FRANCISCO BAY REGION - 1974



POLLUTANT	EXTENT OF PROBLEM*		
	NO. OF DAYS OVER STANDARD		
	1-24	25-49	>50
OXIDANT**	○	◐	●
CARBON MONOXIDE	△	◐	◑
PARTICULATES	□	◐	◑
SULPHUR DIOXIDE	▽	◐	◑

* Based on observations during 1974 at population oriented community monitoring stations. These data do not necessarily reflect localized problems in the immediate vicinity of point sources.

** Oxidant data has not been adjusted to reflect the California Air Resources Board recalibration of 1975.

Sources responsible for air quality problems may not be located in the same areas in which the problems are observed, since winds can transport pollutants from one part of the region to another.

Lack of a pollutant symbol at various sites does not necessarily imply no air quality problem exists for that pollutant.

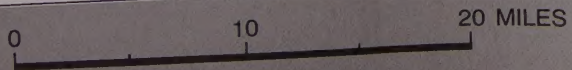
AIR POLLUTION IN THE BAY AREA BY STATION AND CONTAMINANT: 1974											
For oxidant and for nitrogen dioxide, "max" is the highest hourly average value expressed in part per hundred million. For carbon monoxide, "max" is highest 8-hour average value in parts per million. (The one-hour standard for CO was never exceeded during the year.)											
For sulfur dioxide, "max" is highest 24-hour average value expressed in parts per million. For total suspended particulates (TSP) "mean" is annual geometric mean in micrograms per cubic meter.											
Stations	Ox Max.	*1	**2	CO Max.	*	NO ₂ Max.	*	SO ₂ Max.	+	TSP Mean	***
San Francisco	14	4	4	9.9	2	16	0	.070	0	57	6.0
San Rafael	12	2	8	8.1	0	17	0	.015	0	39	2.5
Richmond	11	1	1	7.0	0	15	0	.041	0	45	1.7
Pittsburg	15	21	30	9.2	1	20	0	.028	0	50	5.0
Concord	15	18	31	—	—	—	—	—	—	—	—
Walnut Creek	13	3	6	9.5	1	25	1	—	—	—	—
Oakland	18	20	31	—	—	—	—	—	—	—	—
San Leandro	23	35	48	—	—	19	0	.012	0	57	9.2
Hayward	22	41	61	7.6	0	18	0	.006	0	74	28.2
Fremont	28	83	93	6.4	14	30	4	.016	0	59	12.0
Livermore	28	69	87	16.9	—	—	—	—	—	—	—
San Jose	24	77	96	—	—	—	—	—	—	—	—
Alum Rock (NS)	17	44	63	5.9	0	13	0	.004	0	—	—
Gilroy (NS)	25	53	69	—	—	—	—	—	—	—	—
Los Gatos	18	31	46	9.1	2	31	3	.008	0	41	2.5
Sunnyvale	15	15	20	8.8	0	33	2	.017	0	50	5.8
Mountain View	18	11	18	9.8	2	—	—	.038	0	39	0.8
Redwood City	16	10	13	—	—	—	—	—	—	—	—
Burlingame	14	4	6	8.0	0	15	0	.006	0	43	2.6
Petaluma	10	22	32	10.1	1	14	0	.019	0	59	6.7
Santa Rosa	16	22	28	11.9	14	14	0	.015	0	61	14.3
Napa	16	26	38	—	—	—	—	—	—	—	—
Vallejo	15	—	—	—	—	—	—	—	—	—	—
Fairfield	—	—	—	—	—	—	—	—	—	—	—

(NS) Indicates new station, activated during 1974.

* Number of days ambient air quality standard was exceeded. *1 State oxidant standard ≥ 10 ppm, **2 Federal oxidant standard > 8 ppm.

+ Percent of observed days when State air quality standard (100 $\mu\text{g}/\text{m}^3$ for 24 hours) was exceeded.

*** Percent of observed days when State air quality standard (100 $\mu\text{g}/\text{m}^3$ for 24 hours) was exceeded.



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